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NORTH AMERICAN HERPETOLOGY;

OR,

A DESCRIPTION

OF THE

REPTILES INHABITING THE UNITED STATES.

BY JOHN EDWARDS HOLBROOK, M. D.

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Vol. IV.

PHILADELPHIA:

J. DOBSON, CHESTNUT STREET.

1840.

E. G. DORSEY, PRINTER,
LIBRARY STREET.

INTRODUCTION.

In offering the fourth volume of North American Herpetology to the public, I must again return my thanks for the continued aid of those gentlemen who have assisted me in the former volumes.

Among others, I would particularly thank Dr. Harden for many animals from Georgia, accompanied with valuable remarks on their habits; especially the salamanders and sirens,—and S. S. Haldeman, Esq., for several living reptiles of Pennsylvania, including a beautiful specimen of Coluber sipedon, from which the plate in the present volume was taken.

To Dr. Barrott, of Abbeville, South Carolina, well known as an excellent Botanist, I am indebted for a sight of what may be considered one of the most remarkable of the North American reptiles—the Chelonura Temminckii.

I am again, in this volume, obliged to Miss Martin, of Charleston, for a beautiful drawing of the Coluber constrictor.

My friend T. M. Logan, M. D., of Charleston, has materially assisted me in this, as in the preceding volumes.

I have to thank Mr. Charles Rogers, of Charleston, for several drawings of great beauty.

Mr. Heimans, of Nashville, Tennessee, has sent me at different times drawings of animals of the Western country, done with great spirit and correctness; engravings of which have appeared in the two last volumes.

In this volume, as in all the preceding, I have abstained from anatomical descriptions, reserving them for the last volume of the work, where the anatomy of each genera will be given, together with the engravings necessary for their illustration: at present I am treating chiefly of the external forms and general habits of the reptiles.

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Trionyx ferox
1.

Thos M'Legan M.D print.

P.S. Duval Lith. Phila.

TRIONYX.—*Geoffroy de St. Hillaire.*

Genus Trionyx.—Characters. Shell with a bony disk in the centre, from the sides of which project bony tubercles or ribs; margin cartilaginous, flexible; mandibles furnished with thick lips at the sides; snout prolonged; anterior extremities with five fingers, palmate, the three internal furnished with nails; posterior extremities with five toes, palmate, the three internal with nails; tail very short, thick, and conical.

TRIONYX FEROX.—*Schneider.*

Plate I.

Characters. Head elongated, oval, snout greatly prolonged; neck very long; body covered above with a strong cartilaginous shield, entire, with numerous short spines or tubercles on the anterior margin; and several knobs near the posterior border; above umber coloured, marked with irregular dusky blotches; abdomen beautiful white, and marked with numerous red blood-vessels. Anterior extremities with five palmated fingers, the three anterior only furnished with nails; posterior with five toes fully palmated, the three internal with nails.

Synonymes. A new fresh water Turtle, commonly called Soft shelled Turtle, Phil. Trans. for 1771, vol. lxi. p. 268, pl. x. figs. 1, 2, 3.

Testudo ferox, *Schneid.*, Schildk., p. 330.

Testudo ferox, *Gmel.*, ed. Syst. Nat. Lin., tom. i. part iii. p. 1039.

Soft-shelled Turtle, *Bartram*, Travels, p. 177.

La molle, *Lacép.*, Quad. Ovip., tom. i. p. 136, not the figure.

Testudo ferox, *Schoepff*, Hist. Test., p. 88, f. xix.
Testudo verucosa Bartrami, *Schoepf*, Loc. Cit., p. 90.
Testudo ferox, *Latr.*, Hist. Nat. Rept., tom. i. p. 165.
La Tortue de Pennant, *Daud.*, Hist Nat. des Rept., tom. ii. p. 69.
Testudo Bartrami, *Daud.*, Loc. Cit., p. 74.
Testudo ferox, *Shaw*, Gen. Zool., vol. iii. part i. p. 64, pl. xvii. fig. 1.
Trionyx Georgicus, *Geoff.*, Ann. Mus., tom. xiv. p. 7.
Trionyx Bartrami, *Geoff.*, Loc. Cit., p. 18.
Trionyx ferox, *Schweig.*, Arch. Königsb., vol. i. p. 285.
Trionyx ferox, *Merr.*, Neue, Class. de Rept., p. 20.
Trionyx ferox, *Say*, Jour. Acad. Nat. Sc. Phil., vol. ii. p. 203.
Trionyx spiniferus, *Lesueur*, Ann. Mem. du Mus., tom. xiv. p. 258, pl. vi. figs. a, b.
Testudo ferox, *Leconte*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 93.
Aspedonectes ferox, *Wägler*, Nat. Syst. der Amph., p. 134.
Trionyx ferox, *Gray*, Synops. Rept., p. 43.
Trionyx ferox, *Harl.*, Med. and Phys. Res., p. 158.
Gymnopus spiniferus, *Dum.* et *Bibr.*, Hist. Nat. des Rept., tom. ii. p. 477, pl. xxii. fig. 1.
Soft-shelled Tortoise, or Soft-shelled Turtle, *Vulgo.*

Description. The shell is suboval, larger behind, entire, ecarinate, greatly depressed, and smooth above, except where some tubercles are situated on its posterior soft portion. These tubercles are small and disposed in rows, and reach from the margin to the circumference of the bony disk. At the anterior border are seen a number of pointed or conical tubercles; many of them are almost horny at the tip.

The sternum is oval, entire, and full in front, extending even beyond the carapace; its anterior part is cartilaginous and movable, and can be drawn upwards at the will of the animal, so as to touch the shell, and thus conceal the head when retracted. Posteriorly the sternum is also entire, but smaller, and much less extensive, leaving the extremities completely exposed.

The head is large, elongated oval, with the forehead considerably elevated, and the snout small, cylindrical, and greatly prolonged. The nostrils are anterior

and closely approximated; they are subround, the greatest extent being in the vertical direction, and their long axes are parallel to each other. The eyes are large, prominent, and very closely approximated; the pupil is black, the iris of pale lemon colour, very brilliant, and marked with an interrupted longitudinal black band. The mouth is large, naked in front, but with large revolute movable thick lips at the sides, both above and below. The jaws are entire, or without serræ, and the lower is received within the upper.

The anterior extremities are large, flattened, and covered at the fore-arm with three broad scales placed transversely; there are five fingers, extensively palmated, but the three anterior alone are furnished with nails, the two posterior are far apart, and seem useful only in supporting the web. The posterior extremities are equally large, and still more flattened at the tarsus, which sustains five fully palmated toes, the three anterior furnished with short strong curved nails, a little grooved on their posterior face; the two posterior toes are far apart, and sustain the web, which is here extensive, and continued along the posterior margin of the limb; and besides, there is behind the little toe a large oblong piece of cartilage imbedded in the membrane or web, continued along the leg, which must be still more instrumental in keeping it distended. The tail is thick, conical, short, passing but slightly the carapace; the vent near the tip.

Colour. The superior and lateral parts of the head and neck are umber coloured, the lips a little lighter; the inferior surface is dirty white, with a tinge of green. On each side of the head and behind the eye is a yellowish oblong blotch, bordered with black, which in young individuals is bright, and continued towards the snout, but becomes more and more obscure as the animal increases in age.

The shell above is umber coloured, more or less bright, and marked with large irregular dusky blotches; these are circumscribed in the young, but are spread out with irregular margins in adults, and sometimes they disappear altogether and leave the shell of one uniform colour. The sternum is white, and beautifully

marked with waving red lines, caused by the blood-vessels being seen through the transparent skin.

The extremities are umber coloured above, the webs tinged with green; below they are white, tinged with green, which latter colour prevails at the webs.

Dimensions. The length of shell in the animal here represented was 16 inches; breadth, 12 inches; length of sternum, $10\frac{1}{2}$ inches; length of head, $2\frac{1}{3}$ inches; breadth, 2 inches; elevation of the animal, 3 inches. They sometimes are found of much greater dimensions.

Habits. The Trionyx ferox, in its native state, is a voracious animal, feeding on fish, or such reptiles as it can secure, and is so greedy that it takes the hook readily when baited with animal substance; yet in confinement, even of several months duration, I have never seen it take sustenance of any kind, though it was offered a variety of food. In the more southern rivers the Soft-shelled Turtle is said to destroy great numbers of young Alligators, and in turn are devoured by the old. They reside most constantly in the water, swim with rapidity, and choose for their retreats holes under the banks of rivers, or under rocks, and not unfrequently the trunk of some huge forest tree fallen into the stream affords them shelter. Sometimes they leave the water and conceal themselves in the mud; I have frequently seen them thus buried to the depth of two or three inches, leaving only a small breathing hole for the long neck, and narrow head, which it occasionally thrusts out, but most commonly has it retracted so that one would pass near without observing its habitation; and if seen, it might easily be mistaken for the residence of some large insect. At other times they may be seen in numbers on rocks in shallow water, basking in the sun, apparently asleep. In these situations, Dr. Geddings informs me, many are taken, by erecting a slight fence at some distance around them, or by placing other obstructions between them and deep water, to cut off their retreat.

The Trionyx ferox bites severely when provoked, darting forward with great

velocity its long neck and head, and not unfrequently it springs upward at the same time and makes a loud hiss.

In the month of May the females seek sandy places along the banks of the waters they inhabit to lay their eggs, generally about sixty in number; and it is remarkable that, though their motions are slow and difficult on dry land, yet at this season they sometimes mount hillocks several feet high.

The eggs once deposited, the female returns to the water, and leaves them to be hatched by the heat of the sun. The eggs, according to Lesueur, who examined them on the Wabash, are spherical, with the shell more brittle than those of the Emydes inhabiting the same waters.

Of all the Chelonia, the flesh of the Trionyx ferox affords the most delicate food, surpassing even the Green Turtle.

Geographical Distribution. The Trionyx ferox affords an admirable illustration of the influence of physical geography in the distribution of animals. Thus, it inhabits the Savannah as well as all those rivers that empty into the northern borders of the Gulf of Mexico; it ascends up the broad Mississippi, and is found in all its tributaries, even to the very foot of the Rocky Mountains, according to Lewis and Clark; it abounds in the chain of the great northern lakes both above and below the Falls of Niagara; and is equally common in the Mohawk, a tributary of the Hudson river; but is not found in any other Atlantic stream between this and the Savannah river, a distance of nearly eight hundred miles. Now a glance at the map of the United States will show us how this tortoise, doubtless originally a western species, and never migrating by land, can have passed by *water* from the Great Valley of the Mississippi to the northern lakes, and to the Mohawk and even Hudson river. At the source of the St. Peters' river in times of flood there is a free communication with Red river of Lake Winnipeg; which thus affords a passage for the Trionyx ferox to the Lake of the Woods. (Lat. 48°, Say, in Long's Exp.) Again, the Upper Illinois is well known to communicate with the

waters of Lake Michigan in spring floods, so that even loaded boats may pass, and in this way does our animal reach the chain of the lakes that open into the St. Lawrence river. Lastly, previous to the construction of the New York canal, Wood creek at the head of the Mohawk, also at spring floods communicated with the waters of the Oswego river; and consequently there the Trionyx could pass and become "common in the Mohawk," and reach the Hudson, though absent from every other river opening into the Atlantic, between the St. Lawrence on the one hand, and the Savannah on the other.

General Remarks. To Dr. Garden is due the merit of having first described the Trionyx ferox in a memoir communicated to Pennant, the celebrated English naturalist. This memoir was read before the Royal Society of London in the year 1771, and then published in the sixty-first volume of their Transactions. The description is accurate, and is accompanied by three tolerable drawings done from life, and giving three different views of the animal. How it obtained the specific name of Ferox, I cannot determine, unless it might be from its habits as described by Garden—"this animal is very fierce"—and it is uncertain by whom it was first applied. It was not Pennant who thus named it, for he simply confined himself to the memoir of Dr. Garden—"A New Species of Fresh water Turtle, commonly called the Soft-shelled Turtle"—and yet most authors refer this name to him. Twelve years after this, I find Schneider, for the first time, applying the name ferox to this animal, which seems now to have been consecrated by the general use of all naturalists, with one or two exceptions. Thus Geoffroy in establishing the genus Trionyx which has been adopted in this work, reproduces this animal under a new name, Trionyx georgicus, though his description is taken from Pennant. Lesueur next gives an accurate description and drawing of the Trionyx ferox, but under the name Trionyx spiniferus, from the knobs and spines on the carapace, in which he is partly excusable, for he thought it might be a new species of Turtle; for he says it is possible that this animal (T. spiniferus) may be the Trionyx ferox, but from its geographical distribution he doubts it, as he has observed in the United States that even at short distances the same species no longer exist. This is perfectly true as regards the Atlantic

states, but much less so of the western, and if the geographical distribution be referred to it, it will readily be seen how widely extended in the west may be a species entirely aquatic.

Dumeril and Bibron have lately adopted the specific name spiniferus for this animal, which I cannot retain, as that of ferox has the right of priority, having been in general use for nearly fifty years.

They furthermore consider the Trionyx carinatus of Geoffroy, and the Trionyx brogneartii of Schweigger, as merely the young of our animal, and the opinion of such excellent herpetologists is worthy of all credit, especially as they affirm that there is still preserved in the Museum of the Garden of Plants at Paris the identical specimens from which those descriptions were taken.

It has always appeared to me that the "great Soft-shelled Turtle" of Bartram, and the Trionyx ferox were one and the same animal, for no other species than this has ever been received from Florida, with which state we have now almost daily communication. Leconte lived for a time on the St. John's river, the very place where Bartram found his animal, yet he saw only the Trionyx ferox; and several officers of the army, who have been stationed in that country for years, and planters living on the banks of the river, have equally failed in finding the Soft-shelled Turtle with the long warts about the neck. Bartram, though a respectable botanist, was not an accurate zoologist, as his writings clearly enough show—the spines given to the neck are those that properly belong to the carapace, and the five nails represented as belonging to the extremities, are doubtless the result of careless observation—for there are five fingers and as many toes, all perfectly well developed, and he might easily suppose each one furnished with a nail, unless he took the pains to examine them closely.

Dumeril and Bibron are, I think, mistaken in supposing this animal of Bartram a fictitious one. They say it represents the body and head of a Trionyx, but that the feet and cutaneous appendages of the neck were taken from the

Chelys matamata (fimbriata). This can hardly be, for though the Chelys matamata is mentioned in Barrère's Natural History of Guiana, at that time called "La France Equinoxiale," yet the first figure given of it was by Bruguiére in "Le Journal d'Histoire Naturelle de Paris," for 1792, which is so good a one that it has been repeatedly copied by other naturalists, as Schoepff, &c. Now Bartram's work was published in Philadelphia in 1791, consequently he cannot be accused of this deception. Bartram was an upright though somewhat over credulous naturalist.

I can adopt neither the generic name Aspedonectes of Wägler, nor that of Gymnopus of Dumeril; for though it might be necessary to subdivide the genus Trionyx to accommodate all the species with soft shells and three nails, yet in that case I would follow the example of Gray and Bell and retain the name Trionyx for the typical form, as it has been consecrated by time, and apply the new epithet of Amyda, or Aspedonectes, to those that vary from it in proportion of parts, &c., as these must be considered as abnormal forms.

Trionyx nudicus

2.

TRIONYX MUTICUS.—*Lesueur.*

Plate II.

Characters. Shell subround, ecarinate, entire, and without spines or tubercles.

Synonymes. Trionyx muticus, *Lesueur*, Mem. du Mus. d'Hist. Nat., tom. xv. p. 263, tab. vii.
Trionyx muticus, *Leconte*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 96.
Trionyx muticus, *Gray*, Synops. Rept., p. 46.
Trionyx muticus, *Harl.*, Med. and Phys. Res., p. 159.
Gymnopus muticus, *Dum.* et *Bib.*, Hist. Nat. des Rept., tom. ii. p. 482.

Description. The shell is subround, entire, slightly arched, smooth or without spines on its anterior border, and without tubercles on the superior surface either of its anterior or posterior cartilaginous margin.

The sternum is similar in form to that of the Trionyx ferox.

The head is oval, less elevated at the forehead than in the last species, with the snout equally prolonged, and the nares at its anterior extremity. The nostrils are, however, very differently disposed, being large, closely approximated, and of an elliptical form, the larger portion below, and the long axes of the ellipses converging from below upwards and forwards. The eyes are near; the pupil black, and the iris of pale lemon colour, with a dusky bar. The jaws are similar to those of the Trionyx ferox, but more pointed and narrow; the lips are more developed, and mouth larger in proportion.

The anterior extremities are short, thick, flattened, with several scales at the

fore-arm; the fingers are five in number, fully palmate, the three anterior alone provided with nails. The posterior extremities are short, flat, especially at the tarsus, which sustains five toes, fully palmate, the web even reaching along the posterior margin of the leg; the three anterior toes only are provided with nails; the two posterior extend the web; behind the little toe is seen a large scale. The tail is still shorter than in the Trionyx ferox; it seldom passes beyond the disk, and has the anus at the tip.

Colour. The whole superior surface of the head, neck and extremities of the animal is light umber coloured, marked here and there with numerous minute and irregular dark spots.

The sternum is white, with reddish lines, caused by the blood-vessels, with a slight bluish tinge on the bony portion. The inferior surface of the extremities is also white, but with a tinge of blue. The membrane of the feet or web is bordered with yellow.

Dimensions. Length of head, $1\frac{3}{4}$ inches; length of shell, 9 inches; breadth, 8 inches; elevation, 3 inches.

Habits. The habits of this species are similar to those of the Trionyx ferox.

Geographical Distribution. This animal has only yet been found in the Mississippi or its tributary streams.

General Remarks. The Trionyx muticus, which was first noticed by Lesueur, though closely allied with the Trionyx ferox, is perfectly distinct, and is easily recognised by the total absence of spines or tubercles on the cartilaginous portion of the shell. Leconte, however, says he "cannot as yet consider it perfectly distinct," and his observation led several European naturalists to adopt the same opinion. Though the distinctive marks applied to this species by Lesueur are

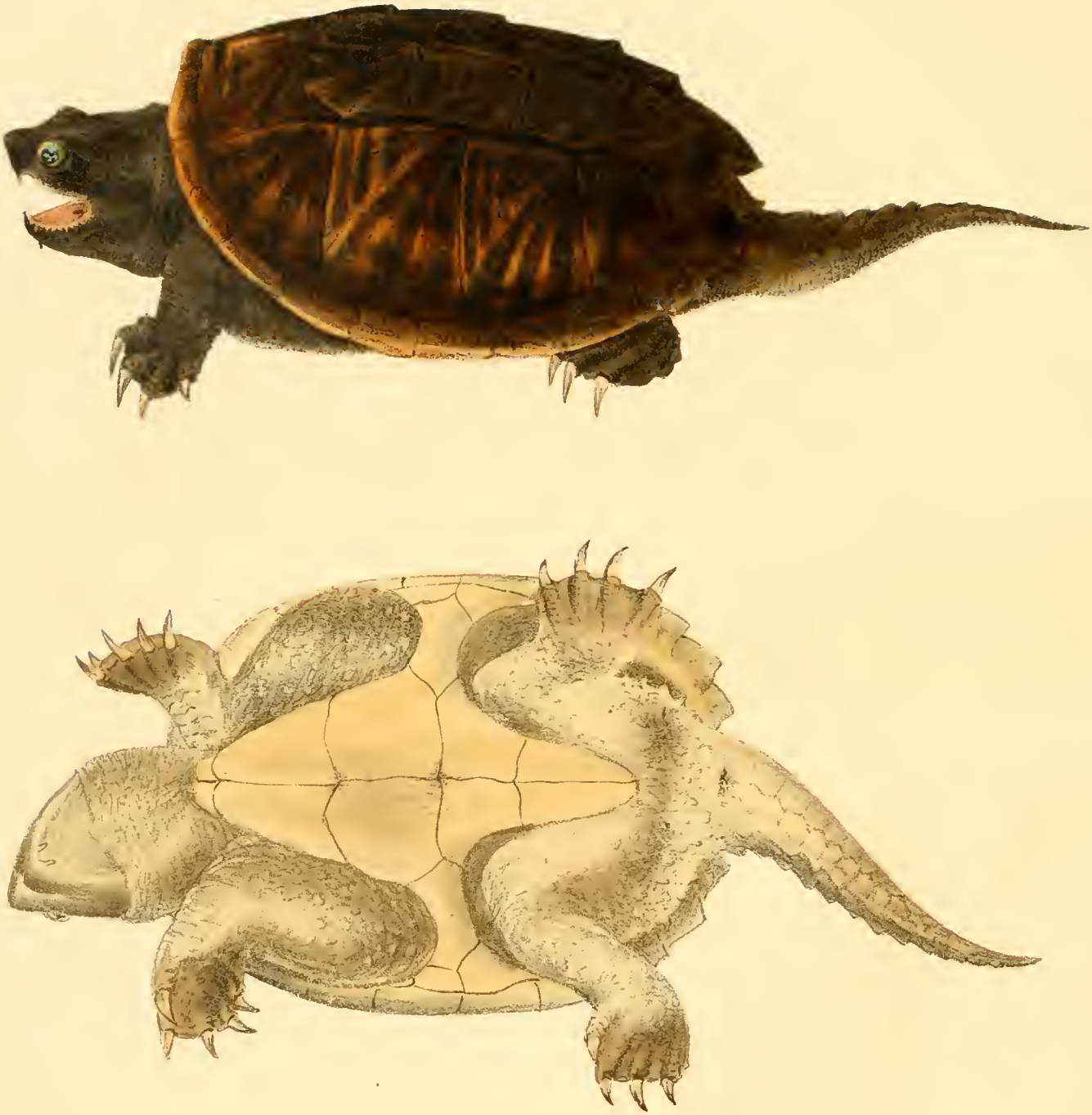
some of them common to the T. ferox, and others are not always present, still he gives two characters which always exist.

1. The total absence of spines or tubercles; and this is by no means the result of age, for they are never seen in large or small, young or old; whereas the spines always exist in the Trionyx ferox, even on those not over three inches in extent, as I have had abundant occasion to observe.

2. The difference of the nostrils, as above described, which is equally constant. And to these others might be added, as, the difference in size, difference of geographical distribution, having never been found to the east of the Alleghany range of mountains, &c.

I have never yet had an opportunity of examining thoroughly this animal, as might be desired, to study its internal structure; yet Troost writes me, that its bony system differs in many remarkable points from that of the Trionyx ferox.

These are the only species of Trionyx that I am as yet prepared to admit into the catalogue of reptiles inhabiting the United States. The Trionyx ocellatus of Lesueur I consider only as the young of the Trionyx ferox, having had frequent opportunities of observing them.



Chelonura serpentina

3.

J. Queen, del.

P.S. Duval, Lith. Phil.ª

CHELONURA.—*Fleming.*

Genus Chelonura.—Characters. Head large, both jaws strongly hooked; sternum small, cruciform, immovable; tail very long, surmounted with a scaly or tuberculated crest; anterior extremities furnished with five nails, posterior with four.

CHELONURA SERPENTINA.—*Linnæus.*

Plate III.

Characters. Head large, snout very short, but pointed; shell oblong or subquadrilateral, depressed, more or less tricarinated, entire in front, deeply emarginate behind, with three points on each side of the central notch.

Synonymes. Testudo serpentina, *Linn.*, Syst. Nat., tom. i. p. 351.
Testudo serpentina, *Lacép.*, Quad. Ovip., tom. i. p. 131.
Testudo serrata, *Penn.*, Arc. Zool. suppl., p. 79.
Testudo serpentina, *Schoepff*, Hist. Test., p. 28, tab. vi.
Testudo serpentina, *Gmel.*, ed. Syst. Nat. Lin., tom. i. part iii. p. 1042.
Testudo serpentina, *Shaw*, Gen. Zool., vol. iii. p. 72, pl. xix.
Testudo serpentina, *Daud.*, Hist. Nat. des Rept., tom. ii. p. 98, tab. xx. fig. 2.
La Tortue serpentine, *Bosc*, Nouv. Dict. d'Hist. Nat., tom. xxii. p. 261.
Chelonura serpentina, *Flem.*, Phil. Zool., vol. ii. p. 268.
Emys serpentina, *Merrem*, Versueh. eines Syst. der Amph., p. 23.
Chelonura serpentina. *Say*, Jour. Acad. Nat. Sc. Philad.. vol. iv. p. 206–217.

Testudo serpentina, *Leconte*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 127.
Chelydra serpentina, *Fitz.*, Neue, Class. der Rept., p. 45.
Chelydra serpentina, *Wägler*, Natur. Syst. der Amph., p. 136.
Chelydra serpentina, *Gray*, Synops. Rept., p. 36.
Chelonura serpentina, *Bonaparte*, Osser. Sul., 2nd ed. Reg. An., p. 174.
Chelonura serpentina, *Harl.*, Med. and Phys. Res., p. 157.
Emysaurus serpentina, *Dum.* et *Bib.*, Hist. Nat. des Rept., tom. ii. p. 350.
Snapping Turtle, *Vulgo*, or Alligator Couta, or Cooter, by the negroes.

Description. The shell is subquadrilateral, smaller and entire in front, larger behind, and deeply emarginate and serrate. The first vertebral plate is octagonal, broadest in the transverse direction, pointed anteriorly, and passes into the nuchal or intermediate marginal plate, and is slightly notched posteriorly for receiving the second vertebral, which is nearly quadrilateral, with a point in the centre of its anterior margin and a minute notch on its posterior that fits it to the adjoining plate; the third vertebral is also nearly quadrilateral, with its posterior border slightly concave; the fourth is octagonal, with its two anterior margins meeting at an obtuse angle in front, while its posterior border presents a slight concavity for the fifth vertebral plate, which is urceolate and irregularly octagonal, narrow in front and passing into the fourth, and broader behind, where it is joined to four marginal plates, with a prolonged angle that runs in between the supra-caudals: superiorly the shell along the vertebral line is so flat that these plates are situated nearly on a horizontal plane, the anterior dipping almost imperceptibly forwards, and the posterior dipping a little more downwards and backwards. The anterior lateral plate is irregularly triangular, with its external border rounded and joined to five marginals, and its internal straight where it joins the second, and concave where it is united to the third vertebral plate; the second and third laterals are very regularly quadrilateral, each with an indistinct point that runs up between two adjoining vertebral plates, and each with three articulating facets below; the fourth is very irregularly quadrilateral, narrow above and broad below, with three facets, and its inferior anterior angle prolonged: each of these plates is surrounded with a prominent knob or tubercle; those of the vertebral range are placed at the centre of the posterior

border of each plate, except the fifth, which is very prominent and occupies the middle of the plate; these knobs present the appearance of a tuberculated carina, more or less prominent, along the vertebral line; each lateral plate has in like manner a knob or tubercle still more developed, but differently situated, here they occupy the superior and posterior corner of the plate; these tubercles make a lateral carina, which gives the shell a tricarinated appearance, differing in appearance, however, in different specimens, as the tubercles are more or less elevated; from each tubercle, lateral as well as vertebral, run, like radii from a centre to a circumference, ridges and depressions, which make the shell beautifully radiated; these ridges are very distinct near the tubercles, but become less so as they approach the margin of the plates, which all have their lateral and anterior borders distinctly marked with four or five concentric ridges and depressions; the fifth vertebral plate alone has all its margins, posterior as well as lateral and anterior, thus marked, for in this plate the tubercle stands nearly in the centre. The marginal plates are twenty-three in number; the nuchal or intermediate is oblong quadrilateral, with its posterior border waving, but concave in the centre for receiving the anterior point of the anterior vertebral plate; the first pair of marginals are elongated, narrow and pentagonal; the second, third, fourth, fifth, sixth, seventh, eighth, ninth and tenth, are elongated quadrilateral, those in front narrow, but gradually increasing in breadth to the tenth, which is largest of all, and has its posterior and external angle projecting in a strong point; the eleventh marginal plate is very irregularly pentagonal, each with a similar strong point projecting backwards; the twelfth are in like manner very irregularly pentagonal, with their longest borders in front and their internal borders very narrow, where they join each other, while their posterior external and posterior internal margins terminate in a strong pointed process; these points and notches give a deeply serrated border to the shell: the marginal plates are generally smooth to the ninth pair, which have concentric striæ on their superior borders; the tenth and eleventh have similar striæ, as well as additional ones on their external and internal margins.

The sternum is cruciform, narrow, rather rounded anteriorly and pointed pos-

teriorly. The gular plate is single, and of rhomboid form, rounded in front and pointed behind, where it is received between the brachial, which are elongated and triangular, with their apices forward and truncate. The thoracic plates are largest of all, and are very regularly pentagonal, with their posterior and external border shortest where they join the abdominal plate, which is irregular in form as well as in position; they are shaped somewhat like an hour-glass, broader internally, where are two articulating facets for junction with the thoracic and femoral plates; they are narrow in the middle, and again expand at the wings to join with two supplemental plates; the femoral are similar to the thoracic in form, but are smaller and narrower on their anterior and external border, where they unite with the abdominal plates; the subcaudals have the form of regular isoceles triangles, with their bases forward and their apices backward. There are three supplementary plates at the wings; the inguinal is broad, very irregularly four-sided, with its posterior and external angle greatly prolonged; the axillary is also broad, and is regularly quadrilateral: these two unite the abdominal plate with the marginals by means of a cartilaginous substance. The third supplementary plate is situated in front of the axillary; it is long, narrow and pointed anteriorly, but is in no way connected with the abdominal plates.

The head is very large, yet the animal can draw it under the caparace; it is broad behind and flattened above, with the snout short, though pointed, covered posteriorly with warty integuments, and anteriorly with the same and occasional small plates at the sides, all adhering firmly to the cranium. The nostrils are anterior and near together. The eyes are large, prominent, and placed near the snout; the pupil is dusky, the iris grey, with a few specks of yellow. The upper jaw is strong, with a sharp cutting edge and a well developed hook in front, on each side of which is a depression or notch. The lower jaw is equally firm, with a similar cutting edge, an equally well developed hook in front, and is received within the upper. The neck is long, but thick, and covered both above and below with a granulated or warty skin, and occasional warts of larger size, two of which, at the chin, are of great length, like barbels.

The anterior extremities are large, and covered with a granulated and warty skin, with transverse rows of large scales both above and below, a remarkable range of which exists along the ulnar margin of the fore-arm; there are five fingers, each furnished with a strong, short, and curved nail, like those of a bird of prey. The posterior extremities are equally strong, well developed, and covered in like manner, but with larger scales beneath, and have a remarkable fold of skin along the fibular margin of the leg; there are four toes, well palmated, and furnished each with a strong, pointed nail, less curved than those of the anterior extremities. The tail is very long, thick at the base, but soon becomes smaller and ends in a pointed tip; it is covered about the vent with a warty and granulated skin, while along the superior border is placed a series of wedge-shaped tubercles, decreasing in size towards its tip, which gives to the tail a strongly marked serrated crest; on either side of these tubercles is a series or two of smaller spiny warts or processes, much less regular, the upper being the larger; the inferior surface of the tail behind the vent is covered with double plates or scales, as in the genus Coluber.

Colour. The head above is dusky; the jaws are horn colour, marked with dark waving lines; the neck above is also dusky, but lighter than the head; the throat and chin are dingy yellowish-white; the shell is dusky or dark cinereous; the sternum is yellow, as well as the inferior surface of the marginal plates; the extremities and tail are dusky or dark cinereous above, and dingy yellowish-white below.

Dimensions. Length of head, $3\frac{1}{2}$ inches; length of neck, $3\frac{1}{2}$ inches; circumference of neck, $7\frac{1}{2}$ inches; length of shell, 9 inches; breadth of shell, 8 inches; elevation, $3\frac{1}{4}$ inches; length of sternum, 7 inches; length of tail beyond the vent, $6\frac{1}{2}$ inches; space from shell to vent, 2 inches; total length, $24\frac{1}{2}$ inches. This was the size of the animal here described, but they not unfrequently arrive at dimensions much greater. Dr. Pickering assures me that he met with one near Salem, in Massachusetts, which from its great size he was induced to measure, and he found it to exceed four and a half feet in length.

Habits. The Chelonura serpentina is found in stagnant pools, or in streams where the waters are of sluggish motion. Generally they prefer deep water, and live at the bottom of rivers; at times, however, they approach the surface, above which they elevate the tip of their pointed snout, all other parts being concealed, and in this way they float slowly along with the current, but if disturbed, they descend speedily to the bottom. They are extremely voracious, feeding on fish, reptiles, or on any animal substance that falls in their way. It takes the hook readily, whatever may be the bait, though most attracted by pieces of fish; in this way many are caught for market. It is, however, necessary to have strong hooks and tackle, otherwise they would be broken, for the animal puts forth great strength in his struggles to escape, both with his firm jaws and by bringing his anterior extremities across the line. When caught, they always give out an odour of musk, more or less distinct; sometimes in very old animals it is so strong as to be disagreeable.

Occasionally the Chelonura serpentina leaves the water, and is seen on the banks of rivers or in meadows, even at a distance from their accustomed element. On land, its motions are awkward; it walks slowly, with its head, neck, and long tail extended, elevating itself on its legs like the Alligator, which at that time it greatly resembles in its motions; like the Alligator also, after having walked a short distance it falls on its sternum to rest for a few moments, and then proceeds on its journey. In captivity, they prefer dark places, and are exceedingly ferocious; they will seize upon and bite severely any thing that is offered them, and their grasp upon the object with their strong jaws is so tenacious, that they may even be raised from the ground without loosing their hold.

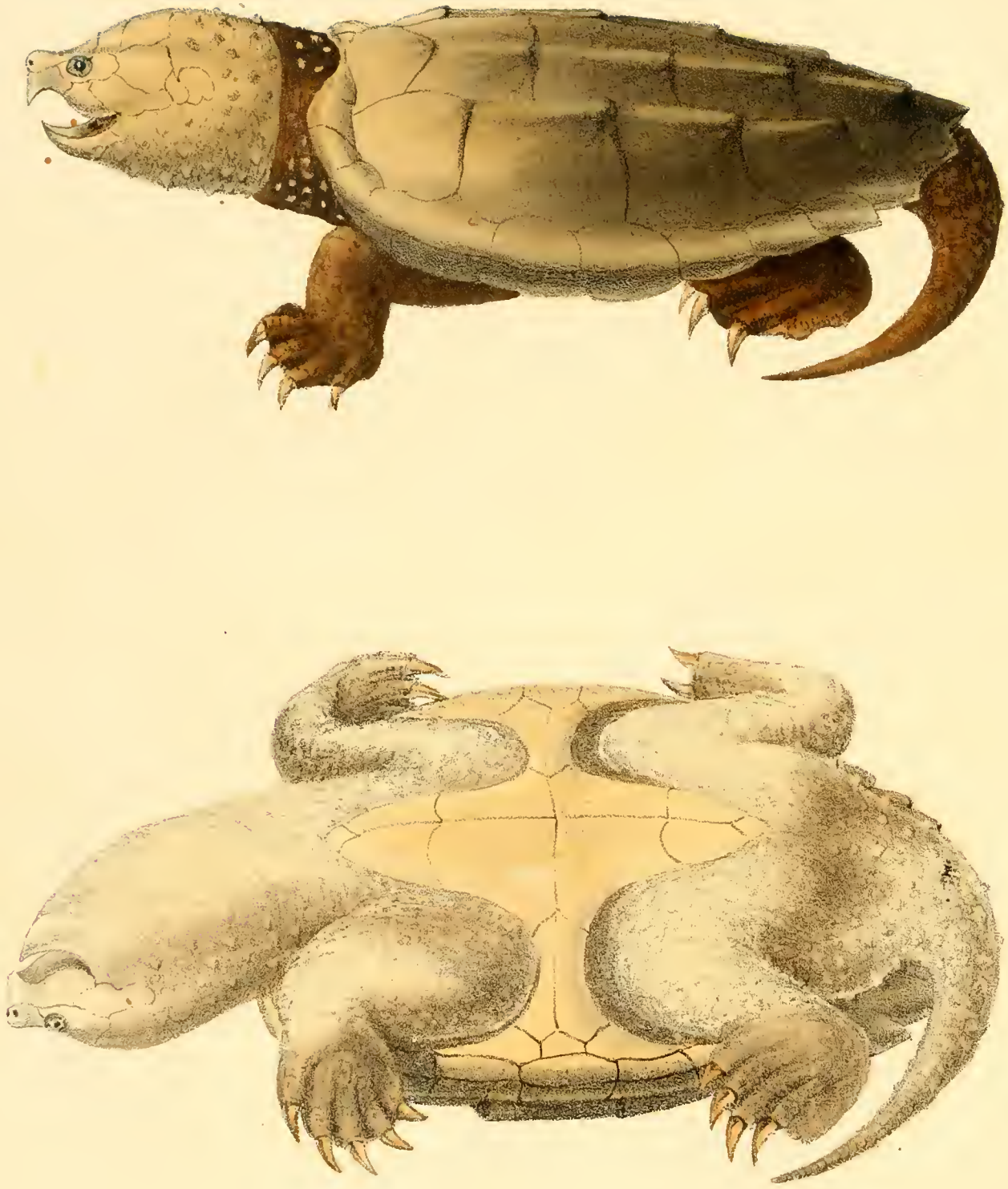
In many of the northern cities they are brought in numbers to market and are esteemed excellent food, though I think they are far inferior to the Green Turtle, the Soft-shelled, or even several of the Emydes. They are kept for months in tubs of fresh water, and feed on such offal as may be given them, though they never become fat or increase much in weight.

Geographical Distribution. The Chelonura serpentina is found in nearly all parts of the United States, from Maine to Georgia, and from the Alleghanies far towards the Rocky Mountains.

General Remarks. Although the description of the Testudo serpentina of Linnæus is short and incomplete, yet it doubtless refers to the animal now under consideration, which is the first trace of it, and the specific name applied by him has been almost universally adopted by naturalists. The next notice is in Pennant's Arctic Zoology, whose description agrees perfectly well with our animal, with the exception of the "small head;" and he alone calls it Testudo serrata.

To Schoepff, however, is due the merit of having first clearly described this animal, and his description is accompanied with an excellent figure.

Some naturalists, Schweigger among others, have described a Chelydra (Chelonura) lacertina; this I regard as only a variety of the common serpentina, in which the carina along the back was unusually depressed; and those excellent herpetologists, Dumeril and Bibron, are of the same opinion.



Chelonura Temminckii.

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CHELONURA TEMMINCKII.—*Troost.*

Plate IV.

Characters. Head enormously large, triangular, broad behind, pointed before, covered above and on the sides with plates; upper jaw strong, "*vulturiform*," hooked in front, cutting margin waving; lower jaw with a strong tooth in front, received in a fossette of the upper; shell tricarinate, subround, considerably concave in front, deeply emarginate and dentate behind; marginal plates thirty-one, placed in two rows at the flanks; tail without a crest.

Synonymes. Chelonura Temminckii, *Troost*, manuscript.

Description. The shell is subquadrangular, with its angles rounded, considerably concave anteriorly over the neck, and deeply emarginate and dentate posteriorly. Of the vertebral plates, the anterior is subtrapezoidal, a little rounded in front and convex behind, with a prominent tubercle above, which commences the vertebral carina; the second is hexagonal, concave in front, carinated, and with a tubercle at the centre of the posterior margin; the third is quadrilateral, with a similar tubercle, but higher; the fourth is shaped like the third, but with a notch behind; the fifth vertebral plate is subpentagonal, narrower above and broader below, with its anterior border projecting into the posterior margin of the fourth, and is surmounted with the highest tubercle; these prominences make an elevated and tuberculated vertebral carina. The anterior lateral plate is subtriangular, with its anterior and inferior border rounded, and joined to five marginal plates; the second and third are quadrilateral, and the fourth very irregularly hexagonal: each of these plates is surmounted by a knob or tubercle, as in the vertebral range, but placed at the superior and posterior part of the

plate; that of the fourth is most elevated; these prominences make on each side a lateral tuberculated ridge, quite as high as the vertebral, so that the shell is tricarinate. There are thirty-one marginal plates, of which the nuchal or intermediate is short, subquadrangular, and very extensive in the transverse direction; it is concave anteriorly, and slightly so at its lateral borders, with a prominence on its superior posterior face; the first marginal is irregularly pentagonal, with an elevated prominence at its outer and anterior part, at which begins the lateral carina; the second is subtrigonal, with its base before and rounded, and its apex truncated and turned backwards; the third and fourth are elongated quadrilateral, with their anterior margins slightly convex; the fifth, sixth and seventh are also quadrilateral, but are much more elongated and narrow; the eighth is quadrilateral and broad; the ninth subrhomboidal; the tenth, eleventh and twelfth are also subrhomboidal, each with a strong projecting point backwards, which gives the serrated and dentated appearance to the posterior margin of the shell. On the sides of the shell, and between the lateral and marginal plates, are interposed three supernumerary plates on each side. There seems, however, to be some variety in their number, for Troost, whose accuracy no one doubts, observed in his specimens four, whereas in the only specimen that I have ever seen there were but three; the anterior large pentagonal with an acute angle above, passing in between the lower margins of the first and second lateral plates, and straight below, where it joins the fifth and slightly the sixth marginal plates; the second supplementary marginal plate is regularly quadrilateral, and is interposed between the second lateral and sixth marginal, touching also slightly the seventh; the third of these plates is also quadrilateral, and situated between the second and third lateral and seventh marginal plates.

The sternum is narrow and cruciform in shape, and resembles that of the last described animal, though there the wings descend a little from the sternum, while here they pass off at a right angle. Troost says it is covered with plates, similar in form and number to those found on the sternum of the Chelonura serpentina; yet in the specimen that I saw the abdominal plates were subdivided, and it

differed in some other respects; but, as the sternum was dried, such observations cannot be relied on.

The head is enormously large, and regularly triangular if seen from above, its basis behind and its apex before, and is covered superiorly and laterally with polygonal plates; the vertical plate is beautifully urceolate, pentagonal, broader behind, narrow before; the superior orbital plates are elongated quadrilateral, and project over the eye, as in the Crotalus; the frontal is irregularly quadrilateral, smaller before, where it projects over the nares, and broader behind, descending to form a portion of the orbit of the eye; the occipital plate is very large, covering most of the head, is of polygonal form, and joined to many of the plates of the head, in front to the vertical and superior orbital, and in all other places is surrounded by smaller plates; the first of these is placed behind the superior orbital, and is of an irregular oblong form, joining also with the post-orbital and superior temporal plates; the second is larger, and situated between the occipital and superior temporal; and still behind this are several smaller polygonal plates, the central one the largest; the posterior orbital plate is regularly pentagonal, concave in front and above for the orbit, straight in front and below where it touches the corneous part of the lower jaw; there are four or five temporal plates, of which the two anterior are largest, the upper quadrilateral, and joined to the corneous covering of the upper jaw in front. The snout is pointed, the nares anterior and close together. The eyes are large and very brilliant, the pupil dark grey, the iris golden, with angular dark projections surrounding its outer margin. Each jaw is protected by a firm horny covering. The upper jaw is strong, sharp, and pointed at its extremity, extends beyond the lower, and furnished with a remarkable hook in front, projecting beyond the lower, and descending at right angles to the frontal plane, behind which the cutting margin is waved or notched, as in some birds of prey. The cutting edge of the under jaw is equally firm, and has an equally well developed hook or tooth in front, which is received in a fossette of the upper jaw. The mouth, though large, is less so in proportion than in the Chelonura serpentina. The neck is short, large, subcylindrical, and covered with a tough abundant loose folded and granulated skin, with large warts

here and there interspersed, both above and below; many of these warts have horny points, though flexible at their base.

The anterior extremities are large, stout, broad, covered with a granulated skin and a few large scales placed transversely on the fore-arm, especially towards the lower and posterior part; there are five fingers, palmated, and a narrow fold of skin extends from the little finger along the fore-arm on the outer and posterior margin; the nails are strong, stout, and slightly curved, and nearly two inches in length. The posterior extremities are equally large in proportion, but more flattened towards the tarsus, and covered with a granulated scaly skin, with some larger warts about the nates, and a few large scales on the tarsus; the toes are five in number, fully palmated, with the web continued, broad like a fringe, along the posterior border of the extremity; there are four long horny nails. The tail is long, round, covered with a warty skin, and three rows of circular or oval plates, more or less elevated, in the centre; here and there they may be seen raised into a round tubercle; these plates or scales are placed one on the vertebral line, and one on each side. Whether the tail below is covered with scales, as in the Chelonura serpentina, I cannot say, as the only species that I have seen was dried, so that this arrangement was not perceptible.

Colour. The head is dusky above; the upper jaw is dingy-yellow, mixed with grey and white; the lower jaw is darker grey, and yellowish near the base. The neck is dusky above and dingy yellow beneath. The shell is greyish or horn coloured, a little darker near each prominence. The sternum is yellow, more or less dingy. The superior surface of the extremities and tail is dusky, the inferior dirty yellowish-white.

Dimensions. Length of head, 8 inches; length of neck, $3\frac{1}{2}$ inches; circumference of neck, 1 foot 10 inches; length of shell, following the curve, 1 foot 10 inches; length of sternum, 1 foot 4 inches; length of tail beyond the anus, 1 foot $2\frac{1}{5}$ inches.

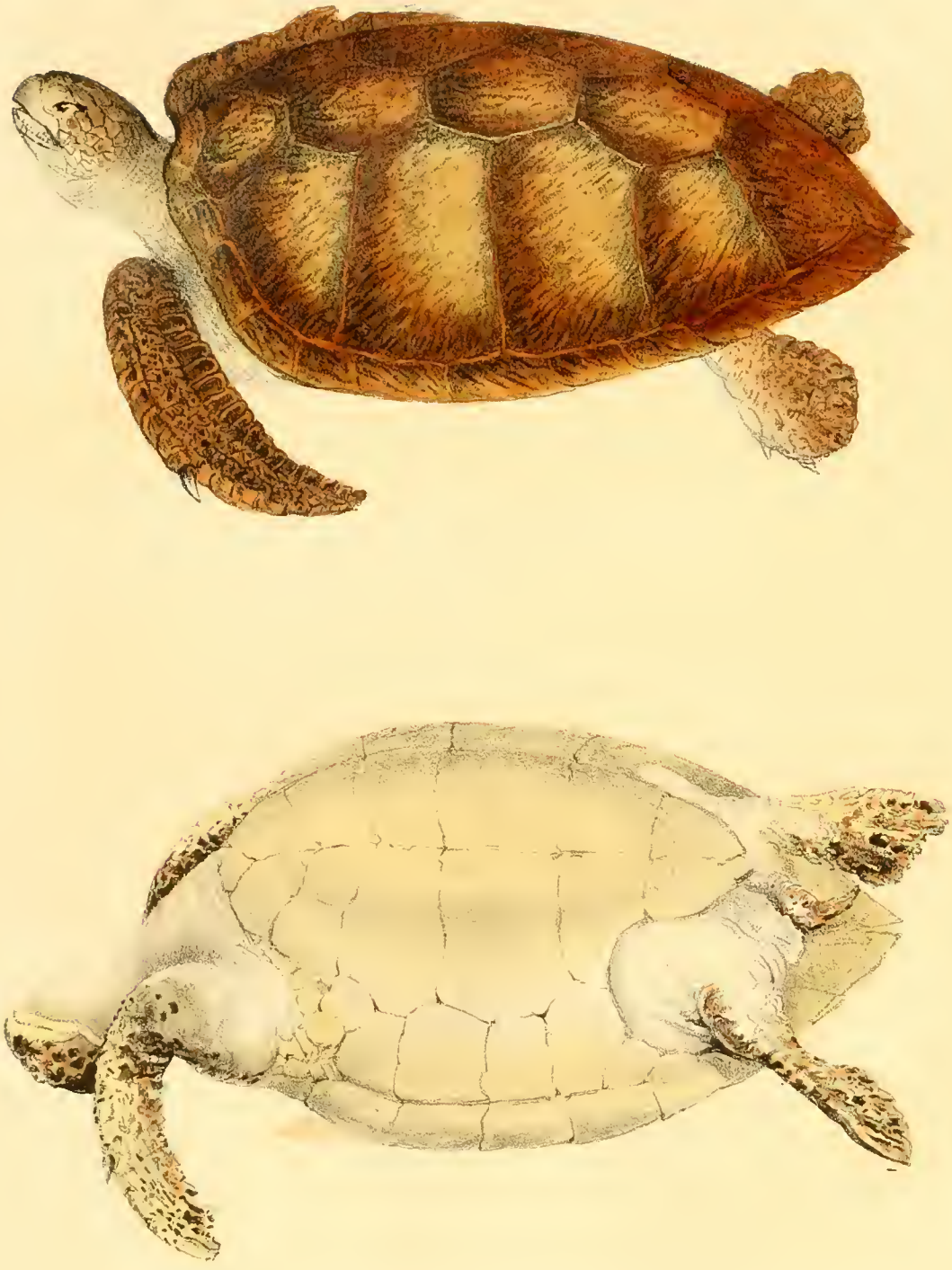
Habits. As far as is known, the habits of this animal are similar to those of the Chelonura serpentina, found in the same waters, and living on similar food. Troost observed in the intestines of one the remains of fish bones, fragments of a large species of unio, &c. Troost kept a Chelonura Temminckii in confinement for several weeks; it remained chiefly in the same place; only once or twice it crossed the little yard in which it was placed, and that was during a rain; if the heat of the sun was intense, it retired to the shade of a tree, where it fixed its residence, or sometimes it preferred the protection of the fence that surrounded the yard. In this way several days were passed, without its moving more than three or four feet, though frequently teazed by children. The flesh is much esteemed as food, and is not inferior in delicacy to the Green Turtle.

Geographical Distribution. The Chelonura Temminckii inhabits the Mississippi river and its tributary streams, as well as some of the rivers of Alabama that open into the Gulf of Mexico.

General Remarks. A good deal of obscurity has hitherto hung over the history of this animal, which is now perfectly removed. Troost was undoubtedly the first person who distinguished it from the allied species, serpentina, and sent drawings and descriptions of it to some European naturalists; but never having seen the animal, they all supposed it to be an overgrown specimen of the Chelonura serpentina,* which indeed it does resemble in many respects, is found in the same localities west of the Alleghany mountains, and is known by the same name, Snapping Turtle or Loggerhead; yet, on minute examination, there will be observed difference enough to make it a distinct species, if not even to place it in a new genus, as will be seen in the anatomical part of this work. Troost has collated the following specific characters of each, which are constant, whatever be the age of the animal, and he has seen them of all ages.

* Vide Dumeril et Bibron, tom. ii. p. 349; also Temminck and Schlegel, in Seibold's Japan, partie Erpetologique, &c.

CHELONURA TEMMINCKII.	CHELONURA SERPENTINA.
1. Head very large, triangular, covered with plates; upper mandible "vulturiform," hooked in front, the hook descending at a right angle from the frontal plane, and with a fossette for the tooth of the lower jaw.	Head smaller, oval, covered with closely adherent skin above and a few small plates at the sides; hook of the upper mandible recurved; no fossette for the tooth of the lower jaw.
2. Skin of neck is granulated, and has warty excrescences, horny at their tips.	Skin of neck granulated, no spiny warts, but with two flexible long warts at the chin.
3. Marginal plates thirty-one; a double series at the sides.	Marginal plates twenty-five, single series.
4. Tail round, and covered with three rows of circular or oval plates, more or less prominent in the centre.	Tail more or less oval, surmounted with a crest of wedge-shaped tubercles, diminishing in size towards the tip.
5. Dimensions—Length of head, 8 inches. Length of neck, $3\frac{1}{2}$ inches. Circumference of neck, 1 foot 10 inches. Length of shell, 1 foot 10 inches. Length of sternum, 1 foot 4 inches. Length of tail beyond anus, 1 foot $2\frac{1}{5}$ inches.	Dimensions—Length of head, $3\frac{1}{2}$ inches. Length of neck, $3\frac{1}{2}$ inches. Circumference of neck, $7\frac{1}{2}$ inches. Length of shell, 9 inches. Length of sternum, 8 inches. Length of tail beyond anus, $2\frac{3}{4}$ inches.



Chelonia mydas

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CHELONIA.—*Brogniart.*

Genus Chelonia.—Characters. Shell large, subcordiform; sternum entire; anterior extremities twice the length of posterior; bones of carpus and fingers, as well as of tarsus and toes, flattened and united, in form of a fin or paddle.

CHELONIA MYDAS.—*Linnæus.*

Plate V.

Characters. Head suboval; snout short and rounded; upper jaw slightly emarginate in front; lower jaw covered with three corneous portions, cutting margin deeply serrated, and furnished with a hook in front; shell subcordiform, smooth, covered with thirteen vertebral and lateral plates, not imbricated; a single nail to each extremity.

Synonymes. La Tortue franche, *Dutert.*, Hist. des Antil., tom. ii. p. 227.
Green Turtle, *Catesby*, Carolina, &c., vol. ii. p. 38, pl. xxxviii.
Green Turtle, *Brown*, Hist. Jam., p. 465.
La Tortue franche, *Laeép.*, Quad. Ovip., tom. i. p. 54, fig. 1.
La Tortue à écailles vertes, *Lacép.*, Loc. Cit., p. 92.
Testudo mydas, *Lin.*, Syst. Nat., tom. ii. p. 350.
Testudo mydas, *Gmel.*, ed. Syst. Nat. Lin., tom. i. part iii. p. 1037.
Testudo mydas, *Schoepff*, Hist. Test., p. 73, tab. xvii. p. 2.
Testudo mydas, *Latr.*, Hist. Rept., tom. i. p. 22, tab. i. fig. 1.
Testudo mydas, *Daud.*, Hist. Nat. des Rept., tom. ii. p. 10, pl. xvi.

Testudo mydas, *Shaw*, Gen. Zool., vol. iii. part i. p. 80, pl. xxii.
Chelonia mydas, *Schweig.*, Prod. Arch. Königsb., tom. i. p. 412.
Caretta esculenta, *Merrem*, Versuch. eines Syst. der Rept., p. 18.
Caretta mydas, *Fitzinger*, Neue, Class. der Rept., p. 44.
Chelonia mydas, *Gray*, Synop. Rept., p. 52.
Chelonia mydas, *Dum.* et *Bib.*, Hist. Nat. des Rept., tom. ii. p. 558.
Green Turtle, *Vulgo.*

Description. The shell is subcordiform, broader in front, narrower and slightly notched and serrated behind. Above the neck the anterior margin of the shell is slightly curved inwards, and over the anterior extremities on each side is a similar curvature, much less distinct, and the whole is covered with thirteen vertebral and lateral plates. The anterior vertebral plate is irregularly hexagonal, broad before, narrow behind, with a notch in its posterior margin; the second is narrow, hexagonal, with prominent lateral angles, its posterior border slightly concave, and its anterior with a pointed angle that is received into the first vertebral plate; the third and fourth are also hexagonal, with similar lateral angles, and with their anterior borders but slightly rounded; the fifth is irregularly heptagonal, broader below, narrow and prolonged above. The first lateral plate is irregularly quadrilateral, rounded in front and below; the second and third are quadrilateral, and so is the fourth, regularly, but smaller. There are twenty-five marginal plates; the nuchal or intermediate is irregularly quadrilateral, its posterior margin twice the extent of the anterior, which is arched inwards; the first marginal is small and triangular, with its basis before and its apex behind, truncate, and joined by a short border to the anterior vertebral; the second marginal is elongated pentagonal, and passes in above the first to the anterior vertebral plate; the remaining marginals are very regularly quadrilateral to the eleventh, which is pentagonal, and the twelfth, or supra-caudal, is of trapezoid form.

The sternum is long, oval, broad, entire, full and rounded before, full and entire but smaller behind. The inter-gular plate is a small, equilateral triangle, with its basis before; the gular are isoceles triangles, with their bases forwards and outwards; the brachial are elongated quadrilateral, narrowest within; the thoracic

are large, broad, and hexagonal, with their three shortest borders external; the abdominals are nearly of the same form, but larger; the femoral are heptagonal, while the subcaudal are regularly triangular, with their bases outwards and backwards, with an exceedingly minute inter-subcaudal triangular plate, from which reaches a row of larger scales or plates towards the anus. There are four large supplementary plates with several smaller ones; of the larger plates the anterior is quadrilateral, and joined to the thoracic; the second is pentagonal and joins within to the thoracic and abdominal; the third is regularly quadrilateral, and connected also internally with the abdominal; the fourth is a rounded hexagonal, with its internal margin united to the abdominal and femoral; besides this it has a smaller triangular plate joined to its outer and posterior border; there are still some supernumerary plates, variable in number, extending between the sternum and carapace, placed in a row along the outer margin of the gular, brachial, and thoracic plates; one of these is largest of all, and is extended in between the brachial and thoracic.

The head is moderately large, oval, slightly compressed at the sides; the snout rounded, with the nostrils anterior but directed a little upwards. Above and at the sides the head is covered with numerous plates of various sizes; of these the vertebral is rounded pentagonal; the superior orbitals are oblong; the frontal are hexagonal, broad and rounded; the anterior frontals are also hexagonal, but are narrower and elongated, broader behind, with their longest margin within. The occipital plates are three in number; the anterior broad and heptagonal, the two posterior are equally broad and trapezoid. The walls of the orbit of the eye are completed in front and below by the corneous part of the upper jaw, and behind by three or four small polygonal post-orbital plates, behind which are seen ten or twelve small polygonal temporal plates, arranged in three perpendicular rows. The eyes are prominent; the eye-lids are well developed, and open obliquely from above downwards and forwards; the upper lid is very large, heavy, and covered with eight or ten small plates disposed in rows; the pupil is dark sea-blue; the iris golden, and in general reticulated and spotted with dusky, but it varies a good deal in different individuals. The upper jaw is slightly emarginate in front

and serrated at the sides; the lower is covered with three corneous portions, is deeply serrated at the cutting margin and furnished with a hook in front.

The anterior extremities are long, rounded at the shoulder, and covered with a tough skin and a few small plates; while the fore-arm, carpus and fingers are flattened like a fin, and are covered with large strong polygonal plates on the anterior border, and with smaller plates above and below; along the posterior margin of the fore-arm and carpus is extended a fold of skin, capable of being distended when the limb is stretched, or folded when it is flexed; in this are imbedded five or six large plates, quadrilateral or polygonal. There is one nail or horny point at the first joint of the anterior finger, of variable size, and sometimes slightly curved. The posterior extremity is short, rounded above, but flattened at the tarsus like a paddle, and covered like the anterior, but with smaller plates, and a fold of skin still more extensive on the posterior margin. The tail is short, thick, clumsy; covered with small, soft, flexible plates above, and has the anus near its tip.

Colour. The plates on the superior surface of the head are light brown in the centre, with the spaces between them yellow; those on the sides of the head are of similar colour, but are margined with yellow, which gives a yellow tinge to the temporal region; the neck above is dusky, and yellow near the shell, below it is yellow; the shell is light brown above, sometimes it approaches a dark fawn colour, marked with radiating or waving lines, or large blotches of dark brown—sometimes it is tinged with green. The sternum is delicate pale yellowish-white. The extremities and tail above are coloured like the shell, rather more dusky; below they are yellowish-white, tinged with green, and dusky near their tips.

Dimensions. The dimensions in the individual here described, were as follows: length of head, $4\frac{1}{2}$ inches; breadth of head, $2\frac{1}{2}$ inches; length of shell, 19 inches; breadth, 14 inches; length of sternum, $12\frac{3}{4}$ inches; yet it frequently reaches a much greater size.

Habits. The Chelonia mydas lives mostly in deep water, feeding on marine plants, especially one called turtle-grass, (zostera marina;) this, according to Audubon, it cuts near the roots, to procure the most tender and succulent part, which alone it eats, while the rest of the plant floats to the surface and is there collected in large fields, a sure indication that the feeding ground of the Green Turtle is near. In confinement, however, they eat readily enough purslain, (portulacca oleracea,) and even grow fat on this nourishment.

Green Turtles are very seldom seen to approach the land, unless at certain seasons to lay their eggs; in the months of April and May, great numbers seek for this purpose the sandy shores of desolate islands, or the uninhabited banks of certain rivers, where they are least liable to interruption in their work of reproduction. The Tortugas islands are a favourite haunt: these are four or five uninhabited sand banks, which are only visited by turtlers and wreckers. Between these islands are deep channels, so that the Turtles come at once to good landing. They are not confined however to these islands, but are found abundantly on other keys and inlets of the main. The female arrives by night, slowly and cautiously she approaches the shore, and if undisturbed, crawls at once over the sand above high water mark; here with her fins she digs a hole one or two feet deep, in which she lays her eggs, between one and two hundred in number. These she "arranges in the most careful manner, and then scoops the loose sand back over the eggs, and so levels and smooths the surface, that few persons on seeing the spot could imagine any thing had been done to it."* This accomplished, she retreats speedily to the water, leaving the eggs to be hatched by the heat of the sun, which is generally accomplished in about three weeks. Two or three times in the season does the female return to nearly the same spot and deposit nearly the same number of eggs, so that the whole amount annually would be four or five hundred; and it is not a little singular that animals so low in the scale of creation, should have the instinct to return to these haunts from great distances, hundreds and even thousands of miles, in some instances

* Audubon's Ornithological Biography, vol. vi., p. 373.

in three weeks. I have been informed that several Turtles were captured at Tortugas, marked, and carried to Key West, there confined in a turtle-pen or "crawl," which was destroyed by a storm; the animals escaped, and in a few days were recaptured at the Tortugas. During the actual time of incubation Turtles may be approached without caution, for they are then so intent on this work of reproduction, that nothing will disturb them.

It is during the breeding season that these animals suffer most from their enemies; they are then taken in a variety of ways and are brought to our markets in immense numbers, being held in high estimation as a wholesome and delicious food. Many are caught at night on shore; these are turned on their backs, nor can they resume their natural position, in consequence of the shortness of their necks and peculiar arrangement of their fins, and thus they remain until they can be leisurely collected the next day. Some are harpooned in the water; and great nets are spread for others at the entrance of creeks and rivers. Numbers are also taken by an instrument called a *peg*, which has been in common use since the time of Catesby, who thus describes the process. "The way in which Turtles are most commonly taken, is by striking them with a small iron peg of two inches long, put in a socket at the end of a staff twelve feet long; two men usually set out for this work in a light boat or canoe, one to row and gently steer the boat, while the other stands at the head of it with his *striker*. The Turtles are sometimes discovered by these men with their head and back out of the water, but they are more often found lying at the bottom, a fathom or more deep. If a Turtle perceives he is discovered, he starts up to make his escape, the men in the boat pursuing him, endeavour to keep sight of him, which they often loose and recover again by the Turtle putting his nose out of the water to breathe. It is sometimes half an hour before he is tired, when he sinks at once to the bottom, and this gives them an opportunity of *striking* him, which is done by piercing him with an iron peg which slips out of the socket, but is fastened by a string to the pole. If spent and tired, he tamely submits when struck to be taken into the boat and hauled ashore."

Audubon observes that he saw a man who, with his *peg*, had been known to secure eight hundred Green Turtles in one year—an immense number certainly. It is now the custom, when the peg is pulled out, to replace it with one of wood, and no bad effects follow the injury. When taken, they are kept in pens called "crawls," that are so placed in the water as to be filled at every rise of the tide; and here they are kept until sold. A still more wholesale mode of destruction is practised by robbing the nests of their eggs. The "Egger" uses a small stiff rod with which he probes the sand in those places where Turtles usually deposit their eggs; and in this way myriads are collected, as may be supposed, when it is recollected that many hundreds of Turtles lay their eggs on a small space of sand bank. The "Eggers," however, do not confine their depredations to the nests of the Green Turtles, but they seize upon those of all other species, as well as upon the eggs of thousands of sea birds that seek the same localities during their breeding season.

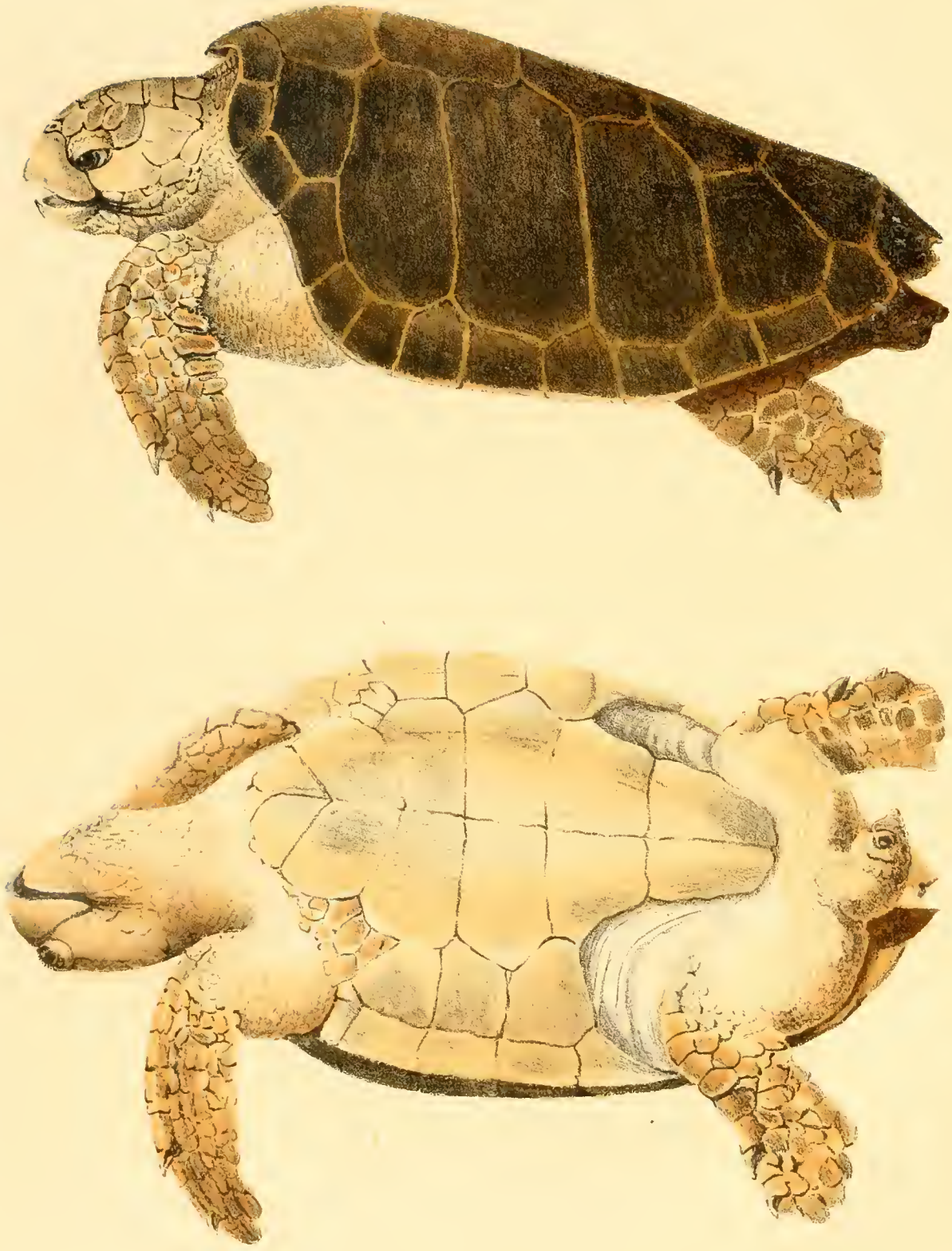
But man is not their only enemy; many eggs are destroyed by Racoons, and many young ones fall a prey to various rapacious aquatic birds, before they reach the water, and many more even after they have reached it are devoured by ravenous fishes.

Geographical Distribution. The Chelonia mydas inhabits the sea coast of the extreme southern points of the United States; it has been seldom found as far as latitude 34, which must be considered its northern limit.

General Remarks. It is a little doubtful if Linnæus had our animal in view when he gave the specific characters of his Testudo mydas, but it is so considered by many naturalists, and almost all have adopted the name.

As yet I am not prepared to receive into the catalogue of North American reptiles the Chelonia virgata of Cuvier, described by Dumeril and Bibron, as well as by Cocteau in Ramon de La Sagra's "Histoire de l'Isle de Cuba," as inhabiting our shores. That such an animal may exist in the Red Sea, as observed by Bruce,

is probable enough, but with us all the Green Turtles that have ever fallen under my observation appertained to one species, the Chelonia mydas; this animal however varies much in shape at different epochs of life: it is broader in the young, and the vertebral plates are then more extensive transversely, as in the Chelonia virgata. They vary also exceedingly in colour, so that of hundreds that I have frequently seen together scarcely two could be selected of precisely similar colours; some were marked as above, others were darker; some with the shell radiated with dark or with light brown, others had an olive hue; while in the old animals a remarkable tinge of green prevailed over the whole superior surface of the body; and some young specimens I have seen marked with colours similar to the Chelonia imbricata, and nearly as beautiful; so that colour alone, as in the Cistuda carolina, is not here sufficient to distinguish species.



Chelonia caretta.

CHELONIA CARETTA.—*Linnæus.*

Plate VI.

Characters. Head of great size; upper jaw nearly straight; lower more or less hooked; shell elongated, subcordiform, smooth, with a crescentic notch in the posterior border; vertebral plates five; lateral plates ten, not imbricated; marginal twenty-five; two spines to each extremity.

Synonymes. Loggerhead Turtle, *Catesby*, Carolina, &c., vol. ii. p. 40, pl. xl.
Testudo caretta, *Lin.*, Syst. Nat., tom. i. p. 351.
Testudo caretta, *Gmel.*, ed. Syst. Nat. Lin., tom. i. part iii. p. 1038.
La Caouana, *Lacép.*, Quad. Ovip., tom. i. p. 96.
Testudo caretta, *Schoepff*, Hist. Test., p. 67, tab. xvi.
Testudo caretta, *Latr.*, Hist. Nat. Rep., tom. i. p. 33.
Testudo caouana, *Daud.*, Hist. Nat. des Rept., tom. ii. p. 54, tab. xvi. fig. 2.
Testudo caretta, *Shaw*, Gen. Zool., vol. iii. part i. p. 85, pl. xxiii., xxiv., xxv.
Chelonia caouana, *Schweig.*, Prod. Arch. Königsb., vol. i. p. 292, 418.
Caretta cephalo, *Merrem*, Versuch. eines Syst. der Amph., p. 133.
Chelonia caouana, *Wägler*, Natur. Syst. der Amph., p. 133.
Chelonia caouana, *Gray*, Synops. Rept., p. 53.
Chelonia caouana, *Dum.* et *Bib.*, Hist. Nat. des Rept., tom. ii. p. 552.
Loggerhead Turtle, *Vulgo.*

Description. The shell is subcordiform, slightly concave in front and over the shoulder, and with a deep crescentic notch behind. The anterior vertebral plate is hexagonal, with its largest border in front, and slightly arched forwards, and is most extensive in the transverse direction. The second and third plates are hexagonal, elongated, much the most extensive in the longitudinal direction, with

short lateral angles, connected with the adjoining lateral plates; the fourth vertebral is also hexagonal, but shorter, and with lateral angles more extended; the fifth vertebral plate is pentagonal, slightly concave in front, with extensive lateral margins and four articulating facets below. In the old animal all these plates are nearly on a horizontal plane; the first being but very little curved downwards in front, and the fifth as little behind. The lateral plates are five in number, the first is smallest, with regularly triangular margins, and its basis directed forwards and downwards; the second lateral is irregularly quadrilateral, rounded below and in front; the third and fourth are pentagonal, with two short borders above, meeting at an obtuse angle; the fifth lateral plate is irregularly quadrilateral, broader below, or it has its posterior and inferior angle truncated where it joins the eleventh marginal, which gives it a pentagonal form. Of the twenty-five marginal plates, the intermediate or nuchal is short in the longitudinal and more than three times as large in the transverse direction; it is small in the middle, slightly concave behind, and much more so in front, and large at its lateral extremities, each having two articulating surfaces, an upper smaller to join with the first lateral, and a lower larger, to unite with the first marginal plate. The anterior marginal is irregularly quadrilateral and arched outward; the second is also quadrilateral, but concave in front; this and part of the fourth making a border arched inwards over the anterior extremities; the third is irregularly quadrilateral, smaller above, larger below; the remaining marginal plates to the eleventh included, are quadrilateral, and make an entire border, sometimes waving, between the tenth and eleventh; the twelfth or supra-caudal marginal plates are sub-rhomboidal, and have a deep crescentic notch between them at their posterior margin.

The sternum is very full and rounded in front, smaller, but rounded behind. The gular plates are large equilateral triangles, with their outer border rounded; the brachials are regularly pentagonal, and so are the thoracic plates, but elongated; the abdominals are broad and pentagonal; the femorals are also pentagonal, but very irregularly so, having their posterior and external border concave; the sub-caudal plates are triangular, with their outer borders rounded. There are

four principal supplemental plates, the anterior of which is small, and does not reach the sternum; the three others are very large; the second is pentagonal, and joins the thoracic; the third is quadrilateral, and unites with the abdominal; the fourth is trapezoid, and is connected both with the abdominal and femoral plates; besides these there are some smaller plates that border the brachials and thoracics; the two larger of which connect the second supplementary with the anterior border of the thoracic, but none reach the shell.

The head is extremely large, broad behind, rather rounded in front, and covered above with about twenty polygonal plates of various sizes. The vertical is small and hexagonal; on each side it has the superior orbitals, which are elongated pentagonal and broadest within; behind these are the posterior superior orbitals, one on each side, of similar form but larger without; behind these again, and on the same longitudinal line, are the parietal plates, of irregular pentagonal form; in the midst of all these plates, and united to all, is a large broad occipital plate, having two or three small plates on its posterior border. There are three posterior orbitals; the superior of which is pentagonal and large, the middle is hexagonal and nearly of the same size; the inferior is largest of all, oblong, and makes part of the inferior wall of the orbit; behind these plates are four longitudinal rows of temporal plates, varying in size and number; the frontals are large and pentagonal, the nasals are small and hexagonal, with a narrow elongated trapezoid internasal plate, which is continued back between the anterior part of the frontals. The upper jaw is protected by a thick horny covering, rounded in front and broad, narrow behind and reaching under the orbit of the eye. The nostrils are anterior, near together, and placed in a cartilaginous substance that occupies the space between the nasal plates and the horny covering of the upper jaw. The eyes are large and prominent; the lids are covered with small plates, and open obliquely from behind downward and forward; the pupil is deep sea-blue, with a dusky grey iris. The upper jaw is strong, nearly a straight line, being but slightly bent downwards in front; the lower jaw is equally firm and strong, and is more or less hooked or turned upwards in front. The neck is short, very thick and strong,

and covered with a granulated skin and minute flexible plates both above and below.

The anterior extremities are long and powerful, rounded at the shoulder, covered with a tough skin and with a few scattered minute flexible plates, depressed and flattened like a fin at the fore-arm, carpus and fingers, and covered with large square pentagonal plates. A remarkable range of these exists along the anterior border; while the posterior margin is bordered with a loose fold of skin capable of distention, in which are placed here and there large plates; in front there are two spines or nails, corresponding with the two first fingers, and of these the first is largest and often hooked. These nails vary in extent; sometimes they are more than an inch long. The posterior extremities are much shorter, rounded above, covered in like manner, and only become flattened like a paddle toward the tarsus and toes, where alone are found large plates. The posterior extremity is also armed with two spines; but these are smaller, shorter and near together. The tail is short, thick and conical.

Colour. The plates of the head are yellowish chestnut or olive-brown in their centre, but have their margins so yellow as to give a strong tinge to the whole; the jaws are yellowish horn-colour. The plates of the shell are light brown, varying in degree, and have sometimes a tinge of olive, and are often bordered with a dirty yellowish tinge; the marginals have it more distinctly, which gives to the whole shell a strong shade of yellow; the young are at times coloured not unlike the Green Turtle; in very old animals the whole shell becomes dusky olive, as seen in the accompanying figure, and the shell is covered with various parasitic animals, as serpulæ, multivalve shells, &c.; the upper surface of the extremities and tail is dusky along their centre, but yellow on the borders; the inferior surface of the whole animal is yellow, more or less clouded.

Dimensions. Length of head, 12½ inches; breadth of head, 10 inches; length of shell, 3 feet 6 inches; breadth of shell, 34 inches; length of sternum, 28 inches. This is the largest specimen with a hard shell. Sometimes it reaches a much

greater size, weighing even, it is said, sixteen hundred pounds. The young animal varies considerably from the adult in shape and colour; the shell is shorter and broader proportionably; the vertebral plates have each a tubercle, which forms a distinct carina; the laterals have similar tubercles, but smaller, and these finally disappear as the Tortoise advances in years; the posterior and external angles of most of the marginal plates project so much as to give a serrated appearance to more than half of the posterior part of the shell. The jaws, though equally strong in proportion to the size of the animal, are both hooked in front, the inferior most so. The colour of the young differs in having the chestnut-brown more distinct and often radiated with yellowish or lighter brown.

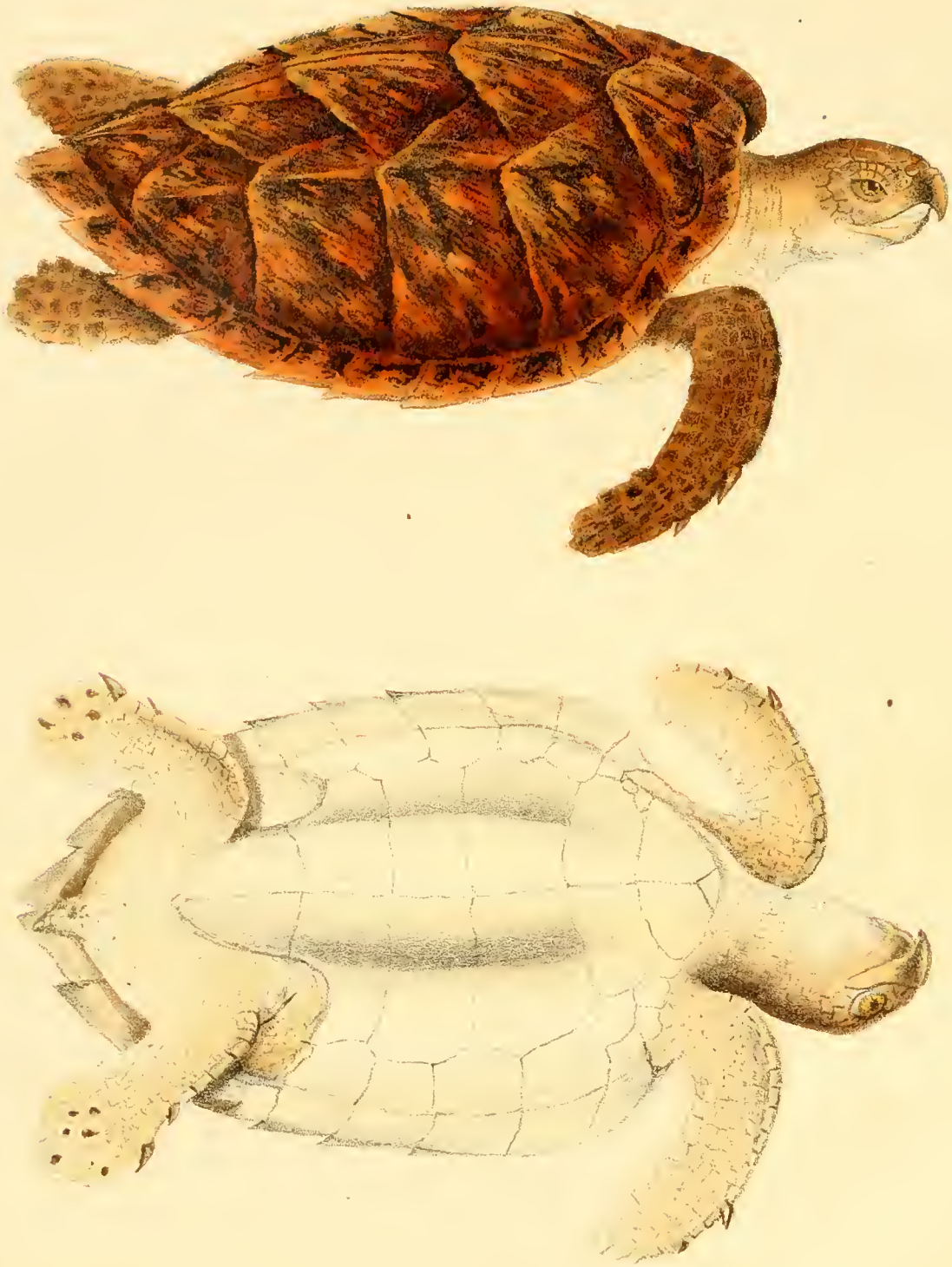
Habits. This animal is much bolder than the Chelonia mydas, and lives altogether on animal food; it is extremely voracious, and devours great quantities of shell fish, as the various Buccinii and Trochi, especially a large conch (Strombus) which it breaks easily between its stout mandibles. It is a strong swimmer, and is frequently seen in the midst of the ocean, floating on the surface of the waves, motionless, and apparently asleep; in which situation they are frequently captured.

Geographical Distribution. This animal has a much wider range than the Green Turtle, and is found on the shores of nearly all the Atlantic states, and frequently lays its eggs on the southern aspect of sandy shoals along the coast of Georgia, Carolina and Virginia. Though much more wary and shy in its habits than the Chelonia mydas, yet it takes far less pains in seeking out retirement and desolate spots to deposit its eggs.

General Remarks. The Loggerhead has the same enemies to contend with as the Green Turtle; but he is sought after with little ardour, as his flesh is so rank and tough as to be nearly unfit for nourishment, especially in old animals, and their shells cannot be used in the arts; yet the war against their eggs is equally exterminating, as they are as good as those of any other species.

Sometimes the young are brought to our markets, and are considered tolerable

food; or the old animal is cut up and sold in pieces by the pound, as is sometimes the better kind of Turtle, but only to people unacquainted with the appearance of the flesh, and then the venders conceal the head to escape detection.



Chelonia imbricata

7.

J. Sera pinxt

P.S. Duval, Lith. Phila

CHELONIA IMBRICATA.—*Linnæus.*

Plate VII.

Characters. Head elongated, narrow; snout prolonged; jaws without serræ, both hooked; shell oval; slightly carinate, subcordiform, concave in front, flattened and serrated behind, and covered with thirteen vertebral and lateral plates, remarkably imbricated; two nails to each extremity.

Synonymes. La Tortue caret, *Dutert*, Hist. des Ant., tom. ii. p. 229.
Hawksbill Turtle, *Catesby*, Carolina, &c., vol. ii. p. 39, tab. xxxix.
Hawksbill Turtle, *Brown*, Hist. Jam., p. 463.
Testudo imbricata, *Lin.*, Syst. Nat., tom. i. p. 350.
Le caret, *Lacép.* Hist. des Quad. Ovip., tom. i. p. 105, tab. ii.
Testudo imbricata, *Gmel.*, ed. Syst. Nat. Lin., tom. i., p. 3.
Testudo imbricata, *Schoepff*, Hist. Test., p. 85, tab. xviii.
Testudo imbricata, *Latr.*, Hist. Rept., tom. i. p. 50.
Testudo imbricata, *Daud.*, Hist. Nat. des Rept., tom. ii. p. 39.
Testudo imbricata, *Shaw*, Gen. Zool., vol. iii. part i. p. 89, pl. xxvi. xxvii.
Caretta imbricata, *Merrem.*, Versuch eines, Syst. der Amph., p. 19.
Chelonia imbricata, *Schweig.*, Prod. Arch., Konigsb., vol. i. p 291 and 408.
Chelonia imbricata, *Gray*, Synop. Rept., p. 52.
Chelonia imbricata, *Dum.* et *Bib.*, Hist. Nat. des Rept., tom. ii. p. 417.
Chelonia imbricata, *Cocteau*, Hist. d'Isle de Cuba, par Ramon de Lasagra, p. 28.
Hawksbill Turtle, *Vulgo.*

Description. The shell is depressed, oval or subcordiform, almost ecarinate, slightly concave in front and over the shoulders, flattened narrow and serrated behind, and covered with thirteen plates, imbricated like tiles on the roof of a house. Of these plates the first vertebral is irregularly hexagonal, larger in front and

slightly prominent in the centre; the second and third are also hexagonal, with their anterior margins concave and slightly rounded behind to fit the adjoining plates; the fourth is similar in form, but broad before and narrow behind; the fifth is irregularly trapezoid; the first lateral plate is irregularly quadrilateral, longest in the transverse direction, and rounded at its anterior and external margin; the second and third are pentagonal; the fourth is quadrilateral and smaller, with its posterior border smallest; of the marginal plates the nuchal or intermediate is irregularly quadrilateral, extensive transversely, narrow at the middle, and concave in front; the first marginal is irregularly triangular, with its external angle curved; the second is quadrilateral, as well as the third, fourth, fifth, sixth and seventh, and more or less elongated; the eighth, ninth, tenth and eleventh have their outer and posterior angles more and more developed and projecting beyond the adjoining plates; the twelfth are trapezoidal, with a deep notch between them, which gives a serrated appearance to the posterior margin of the shell more or less distinct: these plates are all imbricated, and smooth, but in old age they sometimes become wrinkled.

The sternum is large, full, entire in front and behind, but hollow and depressed along the mesial region; the intergular plate is small, triangular, with a rounded base directed forwards; the gulars are irregularly quadrilateral, elongated outwards and forwards; the brachial are irregularly quadrilateral, large, and most so in the transverse direction, with their anterior and external angles truncated; the pectorals and abdominals are quadrilateral and very extensive, most so transversely; the femorals are also broad, but are irregularly quadrilateral, having their posterior and external angles truncated; the subcaudal are irregularly trigonal and elongated; of the supplementary plates the axillary is irregularly pentagonal, the inguinal is quadrilateral, and between these are two quadrilateral or pentagonal plates that unite the abdominal and femoral with the marginal.

The head is oval, elongated, compressed at the sides, and very narrow in front of the eyes. The upper jaw is greatly prolonged, and hooked anteriorly like the beak of a hawk, from which circumstance the common name of the animal is

derived. The lower jaw is also elongated, and furnished in front with a smaller or less developed hook or tooth; and both have their cutting margins entire or without serræ. The nostrils are small, anterior, and closely approximated. The eyelids are large, the upper by far the greater, and covered with some large flexible scales; they open obliquely from above, downwards and forwards. The eyes are large and prominent; the pupil deep sea-blue; the iris golden, reticulated with light brown. The vertical plate is hexagonal, very large, and joined before to the frontal and behind to the occipital, and laterally to the superior orbitals, which are oblong and of hexagonal form; the frontal plate is large, hexagonal, with its greatest extent in the antero-posterior direction, and joined before to the anterior frontals, and behind to the superior orbital; there are two anterior frontals of similar form, but very small, and largest transversely; the nasals are very small and pentagonal; there are four occipitals; the internal are larger and quadrilateral; the external are smaller and of triangular shape; there are two parietals that unite with the superior orbitals; and three posterior orbital plates, very small, the upper quadrilateral and larger; and behind these there are several polygonal temporal plates.

The anterior extremities are very long, though not very broad, and are not unlike the wings of an eagle in shape; at the shoulder they are covered with small flexible plates; at the fore-arm, carpus and fingers the plates are much larger and of variable form; a row of large plates, slightly imbricated, ten or twelve in number, are placed on the anterior border; those along the fore-arm are hexagonal; those at the fingers are rather quadrilateral; on the posterior margin is a fold of skin in which are placed several large elongated quadrilateral plates. The posterior extremities are half the length of the anterior, are rather rounded at the thigh, but flattened like a paddle at the tarsus and toes, and are covered like the anterior, but with smaller plates, and furnished with two nails. The tail is short, conical and covered with soft flexible plates, disposed without order.

Colour. The plates of the head are chestnut-brown in the centre, sometimes tinged with red, with their margins of lighter colour; the jaws are yellowish, with

occasional bars of brown; the neck above is dusky; the chin and throat yellow; the plates of the shell are fawn colour, more or less bright, and marked with radiating or waving bars or spots or blotches, varying in size, of beautiful bright chestnut-brown; the sternum is yellow; the extremities and tail are coloured above like the shell, but more dusky, and are dingy yellow below.

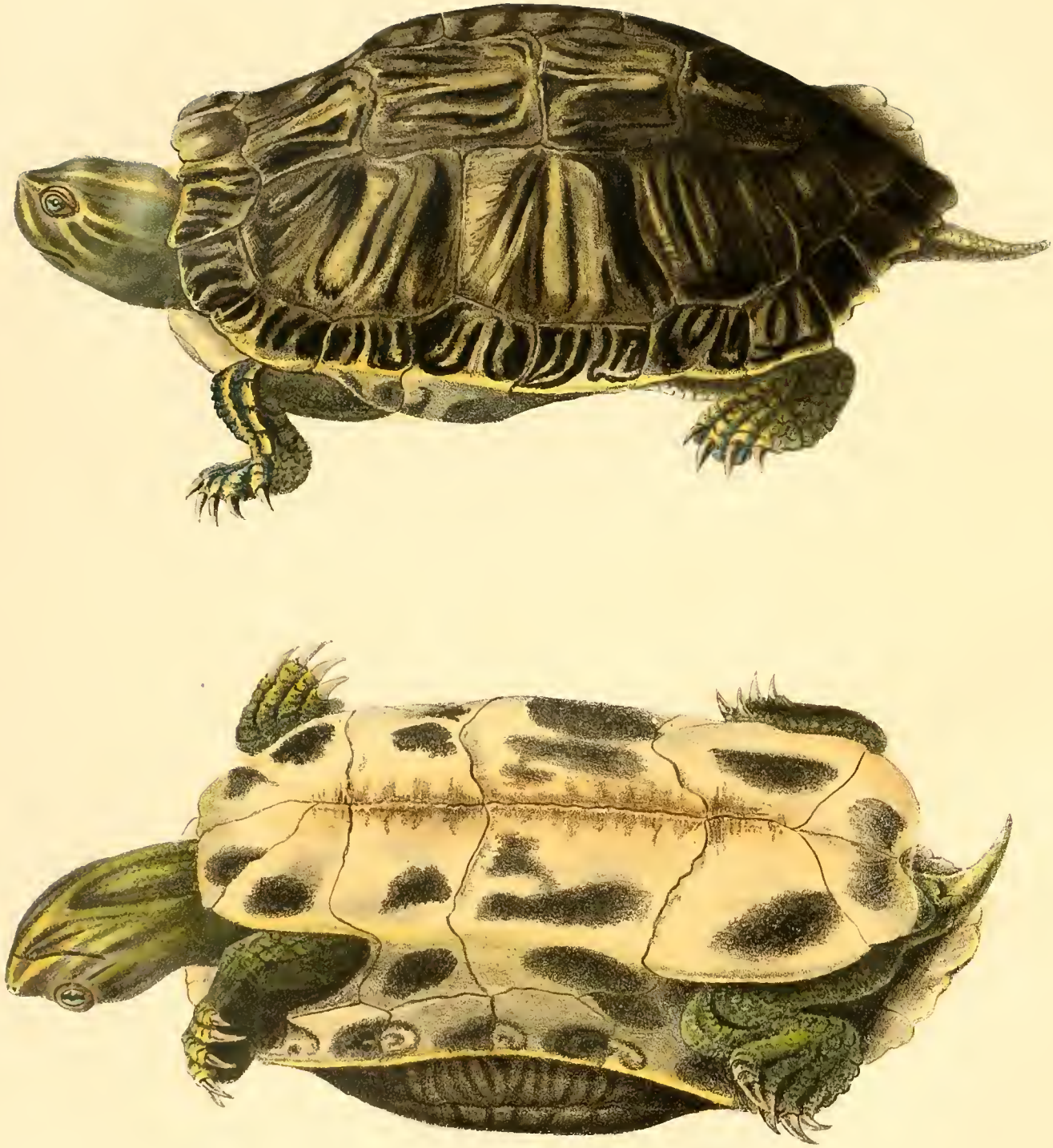
Dimensions. The dimensions of the animal here described were as follows: length of head, 5 inches; length of shell, 18 inches; length of sternum, 11½ inches.

Habits. In their native condition I am not aware that the habits of this animal differ from those of the Chelonia caretta; they seek the same localities and the same food, but in confinement they seem much more ferocious: I have observed them to bite severely the Chelonia mydas, when swimming together in the same reservoir, though the other gave no offence; nor did he offer retaliation for the injury received.

Geographical Distribution. The Chelonia imbricata is found only at the extreme southern points of the United States; once only I knew a fine specimen to be driven to the shores of Carolina during an equinoxial storm.

General Remarks. This animal is only esteemed for the substance it affords called "Tortoise-shell," which is but the lamina or plates that cover the bony shell. Other species of Chelonia have a similar covering, but in no other are these plates sufficiently thick to be of any value in the arts. These lamina are obtained by exposing the convex portion of the shell to a certain degree of heat, which destroys the connection between the plate and the shell; it is now recurved from the borders toward the centre, and can then be easily removed. These plates vary in thickness and in transparency, and are consequently arranged in classes of different value. Tortoise-shell is not considered of the best quality unless the animal has reached a certain size, about one hundred and sixty pounds; before that state it is too thin. The quantity obtained varies much in weight in different

animals; fifteen pounds is the most obtained even from animals of the largest size; yet this substance is so valuable that the Chelonia imbricata of the same dimensions with a Green Turtle would sell for ten times as much. The lamina, when separated, are delicate and easily broken, yet by certain management they can be made to take on any desired form, which is done by immersing them for a time in hot water, and then placing them in moulds of iron or wood; many portions may be joined together by cutting or scraping the edges thin; placing them in accurate contact, in which position they must be retained, and kept in boiling water till softened, then removed and suddenly cooled; and thus can a continuous surface of great extent be produced, even sufficient to cover pillars and doors, as practised by the ancients, with whom it was held in great estimation. For information as to the procedure of arranging this substance for different purposes, as well as for the various uses to which it is applied, we may refer to those works of art that treat on the subject.



Emys cumberlandensis
8.

EMYS CUMBERLANDENSIS.

Plate VIII.

Characters. Head of moderate size; upper jaw slightly emarginate; lower jaw furnished with a small hook in front; shell rubround; indistinctly carinate; slightly notched anteriorly, and beautifully serrated posteriorly; sternum full, entire in front, truncated behind.

Description. The shell is much flattened and subround in form, having a distinct though slightly elevated carina throughout its whole extent; the anterior margin is slightly notched, while its posterior is beautifully serrated. The first vertebral plate is hexagonal, elevated into a small prominence at the centre of its posterior part, where the carina begins; its greatest extent is in the antero-posterior direction, with its posterior margin projecting at the centre, and its anterior marked by three small articulating facets; the second vertebral plate is also hexagonal, with acute lateral angles, its anterior margin concave to receive the first vertebral; its posterior straight, and with its greatest extent in the transverse direction; the third vertebral is nearly of the same form, but has a small pike on its posterior margin, to be received in the fourth vertebral plate, which is also hexagonal, but shorter, and has a notch both on its anterior and posterior margins. These plates are smooth, except the first and fifth, which are marked near the marginal plates with a few slight concentric striæ. The first lateral plate is nearly an equilateral triangle, with its basis downwards and forwards, and joined to five marginals; the second is pentagonal, with three facets on its lower and larger border; the third is irregularly hexagonal, and the fourth quadrilateral. These plates are also slightly marked with five or six longitudinal concentric striæ near their junction with the marginal plates. There are twenty-five marginal plates;

the intermediate or nuchal is an oblong square, a little rounded and projecting anteriorly; the first marginal is pentagonal, dentated in front, its external point most prominent, reaching beyond the second plate; these three plates give the notched appearance to the anterior margin of the shell; the second marginal is quadrilateral, and broadest in front; the remaining plates are all quadrilateral; the fourth, fifth, sixth and seventh regularly so, with their external margins slightly revolute; the eighth, ninth, tenth, eleventh and twelfth marginals are all notched in the centre of their outer borders; the eighth least, and the twelfth most deeply; these notches, as well as the projection of the posterior and external angle of each plate, give the beautiful serrated margin already mentioned. The marginal plates are marked near their upper border with two or three slight concentric lines; all these lines on the marginal, as well as on the vertebral and lateral plates, disappear with age, and the shell becomes perfectly smooth.

The sternum is large, full, entire and rounded in front, and truncated behind; the gular plates are regularly triangular, with their bases before and their apices behind; at their anterior and external angles is a remarkable tooth or process, extending forwards and upwards; the brachial plates are also triangular, with their bases outwards, and their apices inwards and truncated; the thoracics are oblong-quadrilateral, and the abdominals pentagonal and broad; the femoral plates are irregularly quadrilateral, rounded and large without, narrow and straight within; the subcaudals are triangular, with rounded bases directed posteriorly; the supplemental plates are two in number on each side; the axillary is triangular and large, with its basis forwards; the inguinal is also large, oblong, round behind, and pointed before.

The head is small; the snout short and rather pointed; the nostrils are anterior and closely approximated; the upper jaw has a thin cutting border, slightly emarginate in front, and the lower is furnished with a small hook; the eyes are bright; the pupil black; the iris golden, with a black spot before and behind the pupil; the neck is rather long and slender.

The anterior extremities are short, covered with a warty skin, and furnished with large scales placed transversely both above and below; a remarkable range of large scales extends along the ulnar border of the fore-arm to the toes, which are five in number, webbed, and each furnished with a long, delicate, nearly straight nail. The posterior extremities are large, well developed and flattened at the tarsus, covered like the anterior, and sustain five fully palmated toes, four only of which are furnished with nails. The tail is of moderate size, thick at its root, but soon becomes conical and pointed.

Colour. The head above is dusky; the jaws are horn-colour, with dusky bars; from the mouth to the neck run some small longitudinal yellow lines, the central one most distinct; a long lemon-coloured spot begins behind the superior part of the orbit, and runs horizontally for half an inch along the neck, increasing in size, and finally sends off one branch which continues in the same direction, and another that descends along the side of the neck; a second line, of similar colour, and of the same size at its commencement, though it does not increase like the last, descends from the posterior and inferior part of the orbit of the eye to the posterior extremity of the lower jaw, where it terminates in a blotch, with a line nearly of the same size that begins midway between the angle of the mouth and chin; finally another line of equal size begins at the chin, and soon subdivides in two others, between which is placed an intermediate line; all these are continued on the throat, which is dusky, and has some indistinct smaller lines of yellow.

The plates of the shell are brown, more or less dark, each being beautifully marked with a waving blotch, or with radiating lines of yellow or fawn colour.

The sternum is yellow in the centre, each plate being marked with a dusky oblong blotch, placed nearest the outer margin.

The anterior extremities are dusky above, with a brown longitudinal lemon-coloured line reaching even to the nails; in front and behind are similar lines, but smaller; below the limb is dusky, with a line or two and some blotches of yellow,

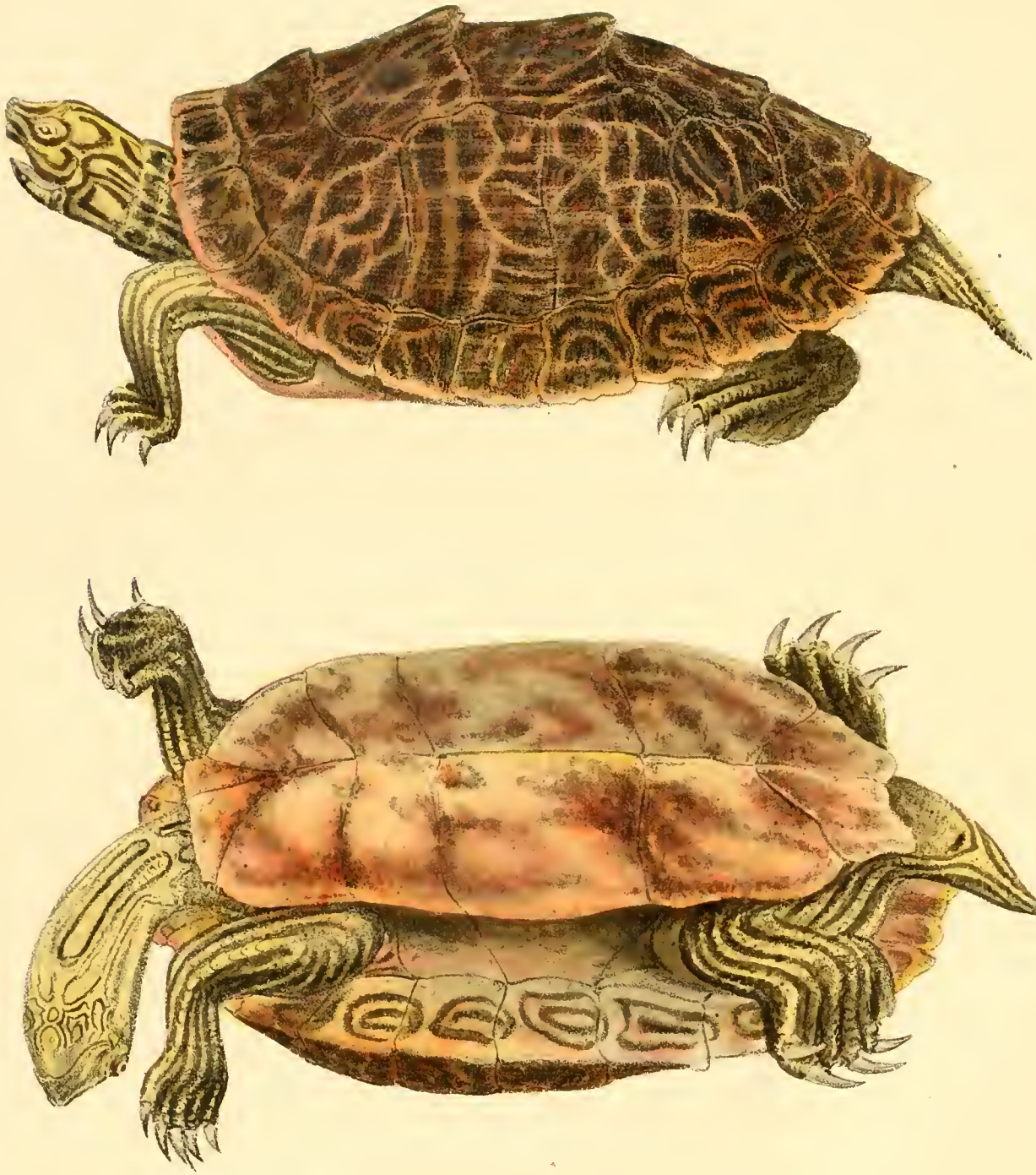
especially near the carpus; the web between the fingers is yellow; the posterior extremities are banded transversely with lemon-colour and black alternately at the nates and posterior part of the thighs; the legs and tarsus are very dark, with a few yellow lines, and below blotched with yellow; the webs between the toes are yellow; the tail is dusky above, with a lateral line along the borders of the upper margin; these lines unite towards the top, and run along its centre; the tail beneath is dusky yellow.

Dimensions. Length of head, 1 inch; of shell, $5\frac{1}{2}$ inches; sternum, $4\frac{1}{2}$ inches; length of tail beyond the vent, 1 inch.

Habits. This animal, so far as I know, does not differ in its habits from the Emydes in general.

Geographical Distribution. Tennessee is the only state in which this animal has been observed, though it doubtless inhabits many others.

General Remarks. It is again to Professor Troost that I must return my thanks for having procured me a living specimen of this beautiful Emys; which he says is the most abundant of all in Cumberland river.



Emys pseudogeographica

9.

Thos M. Logan, M D pinxt

P. S. Duval, Lith. Phila

EMYS PSEUDO-GEOGRAPHICA.—*Lesueur.*

Plate IX.

Characters. Head small, oval; upper jaw emarginate; lower jaw hooked; shell elongated, oval, emarginate anteriorly, serrate posteriorly, with a tuberculated carina above, and a few horizontal striæ on the lateral plates.

Synonymes. Testudo geographica, variety a, *Leconte*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 110.

Emys pseudo-geographica, *Lesueur*, manuscript, Dum. et Bib. Hist. Nat. des Rept., tom. ii. p. 256, *(Synonymes.)*

Description. The shell is elongated, oval, emarginate before and serrate behind, with a remarkable tuberculated crest at the vertebral region. The first vertebral plate is hexagonal, with its posterior border convex or arched, to be received in a concavity of the second, and with a small point in front that enters the nuchal; the second and third vertebrals are hexagonal; the anterior border of the second concave; the fourth vertebral is also hexagonal, but irregularly, being very narrow behind; the fifth is pentagonal, with an acute angle directed backwards, and received between the two posterior marginal plates; the four anterior of these plates have each an elevated knob or tubercle; the fifth has only a ridge; all these give a remarkable tuberculated vertebral carina; of the lateral plates the anterior is irregularly triangular, with a rounded basis directed downwards and forwards, and joined to five marginals; the second and third lateral plates are pentagonal; the fourth is irregularly quadrilateral, broader below and joined to three marginals. The anterior lateral plate is irregularly triangular, with its basis rounded and directed downwards and forwards, and joined to five

marginals; the second and third are pentagonal, the fourth is quadrilateral, larger below and joined to three marginals. Of the marginal plates the nuchal or intermediate is trigonal, with the apex truncated and directed forwards, and the basis backwards, with a small triangular notch to be received on the point of the anterior vertebral; the anterior marginal is pentagonal, with its anterior and external border projecting beyond the second; the remaining plates are quadrilateral; those on the flanks are revolute, and make a groove or gutter; and the five posterior are slightly notched, with their posterior and external angle projecting so much as to give a serrated appearance to the posterior margin of the shell.

The sternum is full and entire in front, and deeply emarginate behind; the gular plates are short and triangular, their bases before, their apices behind, with a projecting spine or knob at their outer and anterior angle; the brachials are also triangular, with bases rounded and turned outwards, and apices turned inwards and truncated; the thoracics are oblong, quadrilateral, narrow in the antero-posterior direction; the abdominals are nearly square, their outer margin offering three facets for joining the marginal and supplementary plates; the femoral are irregularly quadrilateral, broader without, and rounded, with their posterior and external angle lengthened out beyond the subcaudal in a point; the subcaudals are trapezoid in form. Of the supplementary plates the axillary are large, oblong and pentagonal; the inguinals are also large and rhomboidal.

The head is small; the snout is pointed and very slightly turned up; the nostrils are anterior, small and closely approximated; the jaws are entire or without serræ; the upper is slightly emarginate in front, and the lower is provided with a small tooth; the eyes are moderately large, the pupil black, the iris of a rich golden colour, with a small black horizontal band not extending completely through it.

The anterior extremities are rounded at the shoulder, flattened at the carpus, and covered with large scales in front and smaller behind, with a series of scales

on the ulnar margin of the fore-arm; there are five fingers, palmated and furnished with five slender nails, moderately long and slightly curved. The posterior extremities are rounded at the thigh, and greatly expanded at the tarsus; scaly above and scaly and granulate below; the toes are five in number, extensively palmated, but furnished with only four nails. The tail is moderately long, granulated and scaly, with a slight ridge of scales above.

Colour. The head is dusky, marked with yellow lines; one begins at the tip of the snout and runs to the occiput; others from the same place, on each side of it, run over the orbit; others again, having the same point of departure, pass beneath the orbit to a yellow spot which is there placed; several lines of similar colour begin behind the orbit, and run down to the throat; while others pass over the tympanum and along the side of the neck; a yellow spot, triangular and of large size, is situated on the posterior part of the head; and at the cheek is another remarkable spot of similar colour included in a circle of black, which is in turn surrounded by a yellow line. The jaws are horn-colour, marked with black and yellow. The throat is marked with a great many yellow longitudinal lines, several of which are bordered with black, or are included between two black lines.

The vertebral and lateral plates are chestnut or cinereous-brown, marked with lines of yellow or light brown; these run in all directions, and give a reticulated appearance to the shell; the marginal plates are of similar colour, each with one or more perpendicular yellow lines, and with their outer margin yellow; the sternum is beautifully marbled with white and reddish-brown; the wings are marked with oblong black blotches, surrounded by concentric dusky lines.

The superior surface of the anterior extremities is black, with broad yellow longitudinal lines, which run to the toes, and even tinge the webs and convex part of the nails; the inferior surface is dusky, marked with irregular blotches and bars of yellow. The posterior extremities are black above, with a few interrupted yellow longitudinal lines, and with a remarkable band of similar colour

along the posterior border of the thigh and leg; the nates are brown, with yellow bands. The tail is dusky above, with yellow longitudinal lines at the side, and yellow below.

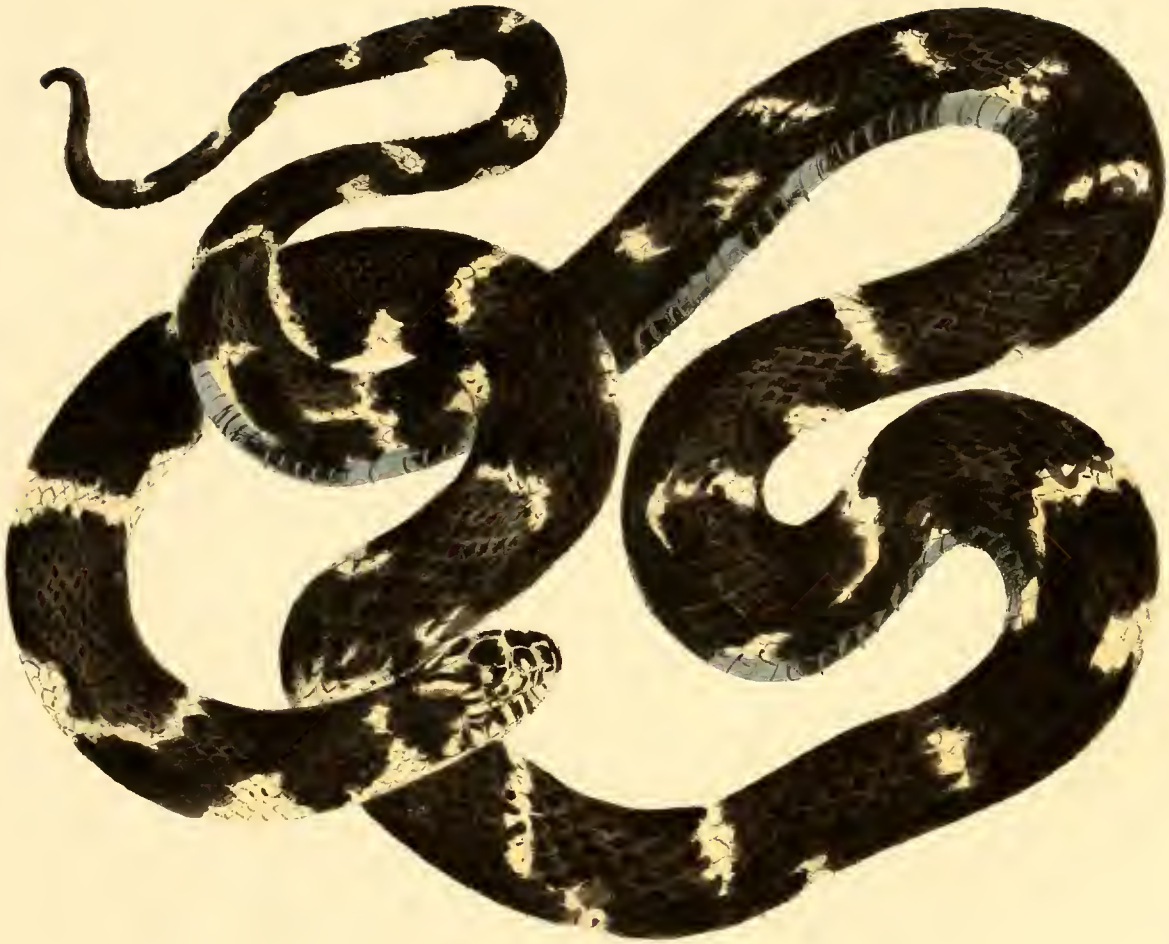
Dimensions. Length of head, 14 lines; length of shell, 6½ inches; of sternum, 6 inches; length of tail beyond vent, 1 inch.

Habits. This animal is entirely aquatic; and though frequently seen on fallen trees or rocks that rise above the water, yet it only seeks the land in the breeding season. It feeds on various small fish, reptiles, &c.

Geographical Distribution. The Emys pseudo-geographica inhabits many of the rivers that empty into the Mississippi, and is abundant in some, but has never yet been found to the eastward of the Alleghany range of mountains.

General Remarks. The first account of this animal was given by Lesueur in the "Memoires du Musèum d'Histoire Naturelles,"* and his description is good, though he considered it a variety of the Emys geographica, in which opinion he has been followed by most naturalists; yet that it is entirely a different animal, may be seen by a reference to the tubercles on the vertebral line, to the form of the jaws, to the immense size of the head, which is more than thrice as large as in the Emys geographica, and to its geographical distribution, &c.; and Lesueur seems to have lately come to the same conclusion.†

* Vide tom. xv. p. 267. † Dum. et. Bib., tom. ii. p. 256.



Coluber gebutus.

10.

COLUBER GETULUS.—*Linnæus.*

Plate X.

Characters. Head small; snout rather truncated; colour above beautiful shining raven-black, with about twenty-two white narrow transverse bars, bifurcating on the flanks to form a nearly continuous waving white line; tail barred, but without lateral lines; abdomen raven-black, with a shadowy tinge of white in certain lights. Scut. ab. 215—subcaud. sc. 49.

Synonymes. Chain Snake, *Catesby*, Carolina, &c., vol. ii. p. 52, pl. lii.
Coluber getulus, *Lin.*, Syst. Nat., tom. i. p. 382.
La chaine, *Laeép.*, Hist. des Serpens, tom. ii. p. 300.
Coluber getulus, *Gmel.*, ed. Syst. Nat. Lin., tom. i. part iii. p. 1106.
Coluber getulus, *Latr.*, Hist. Nat. Rept., tom. iv. p. 174.
Coluber getulus, *Daud.*, Hist. Nat. des Rept., tom. vi. p. 314, pl. lxxii.
Coluber getulus, *Shaw*, Gen. Zool., vol. iii. part ii. p. 467.
Pseudo-elaps getulus, *Fitz.*, Neue Class. der Rept., p. 56.
Coluber getulus, *Harl.*, Med. and Phys. Res., p. 122.
Chain Snake, Thunder Snake, King Snake, *Vulgo.*

Description. The head is small, short, and rather rounded at the snout; the vertebral plate is regularly pentagonal, broad in front and pointed behind; the superior orbital is oblong quadrilateral, narrow before, broader behind, and somewhat projecting externally over the eye; the occipital plates are large and pentagonal; the frontals are irregularly hexagonal, with their narrowest border downward and outwards; the anterior frontals are regularly quadrilateral, a little broader without and narrower within; the rostral plate is broad, short, truncated in front, and of pentagonal form, rounded above and slightly concave below; there are two

quadrilateral nasal plates, nearly of the same size, the one slightly hollowed before, the other behind, to accommodate the nostril; the anterior orbital is single, large, and of pentagonal form, with a small square loral plate between it and the posterior nasal; there are two posterior orbitals, very small and quadrilateral; behind which are two oblong square temporal plates; the labial plates are seven in number, on each side, all quadrilateral to the fifth, which is pentagonal, and of these the third and fourth make up the inferior wall of the orbit of the eye. The nostrils are near the snout, very large, and open laterally. The eyes are rather small, with the pupil black, and the iris dusky. The neck is not contracted, and is covered above with small smooth scales.

The body is elongated, robust, and covered with large smooth hexagonal scales above and large plates below. The tail is short, thick at the root, but soon becomes small, and ends in a horny point.

Colour. The Coluber getulus is one of the most beautiful of our Snakes, and its colours of most singular pattern. The ground of the whole superior surface of the animal, the head as well as the body and tail, is of most rich, shining raven-black; the rostral plate is white in the centre, and every other plate about the head is marked with one or more white or milky-white spots; that of the vertical plate often resembles a transverse white line along its anterior part, while the labials have each similarly disposed spots, but of triangular form and variable magnitude, sometimes equal to half the size of the plate; the chin and throat are white, and have most of the plates margined with black. The body is marked by about twenty-two nearly equidistant tranvserse white bars or rings. These rings are narrow, embracing two or parts of three scales; nor do they surround the body, but bifurcate at the flanks, so that one portion runs to join the ring placed in front, and the other to join the ring behind, and thus produce nearly a continuous waving white line on the flanks, beginning at the neck and terminating at the vent, and nearly at right angles with the transverse bars; alternating with the dorsal bars, the waving line is increased in size below to form an irregular white blotch, reaching to the abdomen, which in other respects is coloured nearly

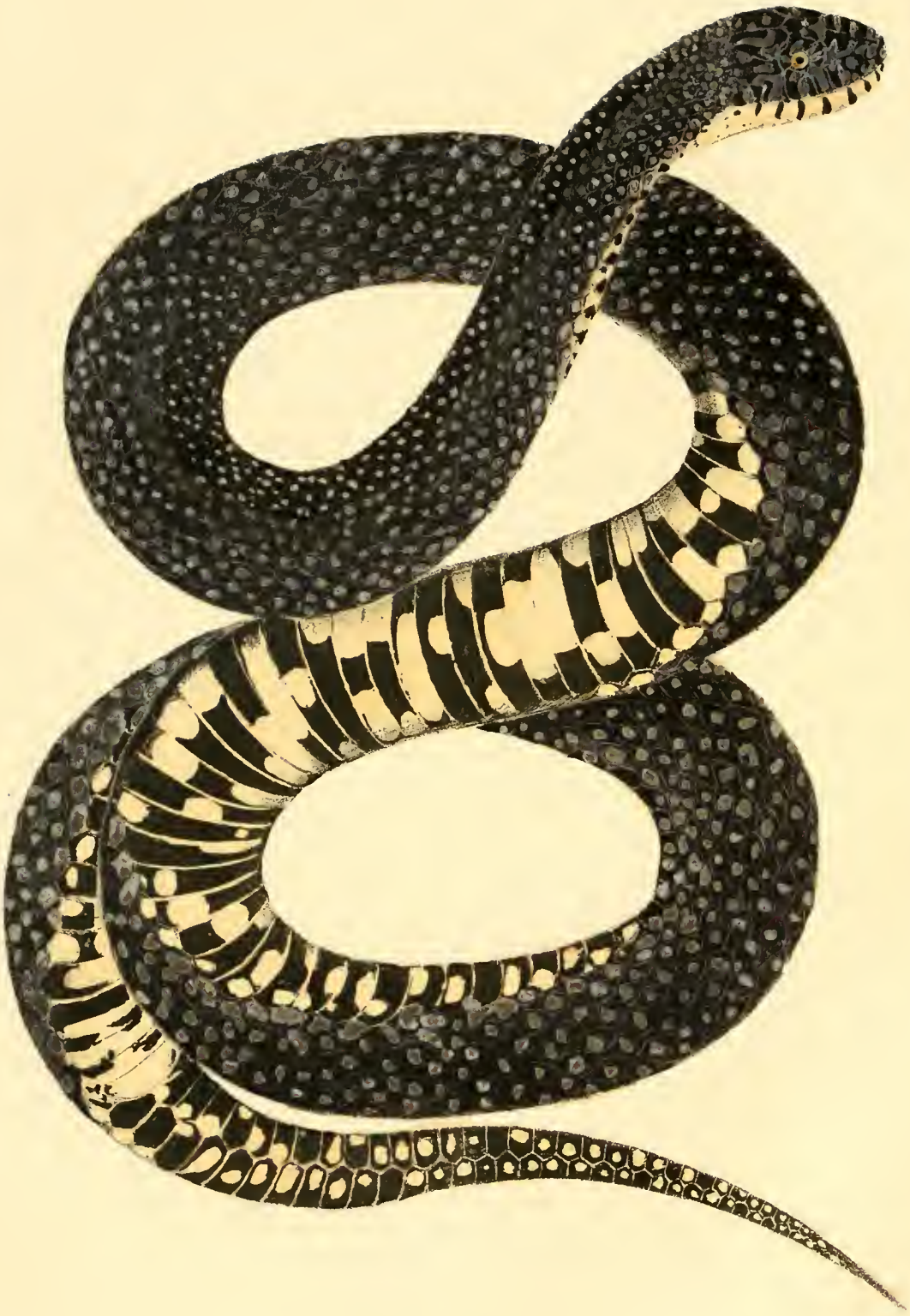
like the back, but is more shining and with a strong tinge of violet. The tail has but four or five transverse rings or white bars, and wants entirely the waving lateral line.

Dimensions. Length of head, 1 inch 2 lines; length of body, 36 inches; length of tail, 5 inches. In the specimen here described there were 215 abdominal plates and 39 subcaudal scales. It must be remarked, however, that the animal at times far exceeds the dimensions above given. Dr. Binney saw one in Georgia nearly five feet; and I have recently received one from North Carolina five feet one inch in length.

Habits. The Coluber getulus is found abundantly in moist and shady places, though I am not aware that it ever takes to the water. It feeds on field-mice, moles, small birds, or such reptiles as lizards, salamanders, toads, &c. that may fall in its way. It is commonly believed that this serpent is the great enemy of the Rattlesnake, though I believe there is no great evidence of the fact. My friend Dr. Binney, however, informed me that he once captured a fine specimen in Georgia, which he placed in a tin box with a full grown Crotalus miliarius: the next day, on examining the box, it was discovered that the King Snake had devoured its fellow prisoner.

Geographical Distribution. This serpent is common enough in the Carolinas, where indeed it was first observed; thence its range extends as far north as New York, and as far south as Florida, inclusive; how much further west it may exist, I have no means at present of determining. Daudin says he is certain that it inhabits Louisiana: the observations however of foreign naturalists on the localities of our reptiles must be received with great caution, for they are led to suppose the animals inhabit the neighbourhood of the ports from whence they are shipped: thus we have it said that the "Anolius," the "Green Turtle," the "Iguana," &c. are natives of the more northern states; some of which are not even found on the continent of North America.

General Remarks. The history of this serpent is plain enough; it was first described by Catesby under the name Chain Snake, and accompanied with a drawing, not very good to be sure, but sufficiently accurate to make it certain that it refers to the animal now under consideration. It next appears in the twelfth edition of the Systema Naturæ as the Coluber getulus, with a single reference to Catesby, and this name it has ever since borne.



Coluber Sayi

II.

T. Richard del. P.S. Duval Lith. Phila

COLUBER SAYI.—*Dekay.*

Plate XI.

Characters. Head small, oval, rather pointed at the snout; body elongated, robust; above purple, tinged with violet; each plate and scale marked with a milk-white spot. Pl. 205—Sc. 53.

Synonymes. Coluber Sayi, *Dekay*, manuscript.

Description. The head is small, oval, short, with the snout rather pointed; the vertical plate is triangular, with the basis broad and directed forwards, and the apex pointed and turned backwards; the superior orbitals are oblong, pentagonal, broader behind, of the same length as the vertical, and slightly project over the eyes; the frontal plates are large, pentagonal and broadest internally; the anterior frontals are also large, but smaller than the posterior, quadrilateral, with their posterior and inferior angles prolonged; the rostral plate is hexagonal, rounded above, concave and slightly projecting below; the nasal plates are two on each side, nearly quadrilateral; the anterior hollowed behind and the posterior concave before to complete the nostrils. There is a single anterior orbital plate, quadrilateral and elongated, most extensive vertically, and two very small posterior quadrilateral orbitals; the occipital plates are large, broad, elongated and pentagonal. The upper jaw is covered with seven large quadrilateral labial plates on each side, of which the fifth and sixth are largest, and the third and fourth make the inferior wall of the orbit of the eye. The nostrils are lateral and near the snout. The eyes are prominent, the pupil dark, the iris grey. The neck is but slightly contracted.

The body is cylindrical, and covered with smooth hexagonal scales above, as

well as on the neck, where they are much smaller. The tail is short, thick at its root, but soon becomes smaller, and terminates in a horny point; the scales of the tail are large, but shorter in proportion than those of the back.

Colour. The head is bluish-black above; each plate with one or more yellowish-white oblong spots; the superior labial plates are yellowish or milky-white, each with a black border at either end, where two adjoining plates meet, which gives a banded appearance to the upper jaw. Every scale of the neck, body and tail is marked with a milky-white oblong spot, most commonly in the centre, but sometimes near the border, so that those of neighbouring scales come nearly in contact, or three or four appear in clusters together; these spots are largest low down on the flanks. The plates of the throat and abdomen are milk-white, each with a black spot, either a square or parallelogram; sometimes these spots are placed in the centre of the plate, and at others near their lateral extremities. In the posterior half of the body the black prevails; the last plate is however entirely white.

Dimensions. Length of head, 1 inch 3 lines; greatest breadth, 1 inch; length of body, 40 inches; length of tail beyond vent, 6 inches 2 lines; total length, 3 feet 11 inches 5 lines.

In the specimen here described there are 205 abdominal plates, and 53 subcaudal scales, with a small horn at the tip of the tail.

Habits. I am ignorant of the habits of this serpent, never having seen but one specimen alive.

Geographical Distribution. The Coluber Sayi seems to be widely extended in the valley of the Mississippi; for I have received them from Louisiana high up the Red river, from Missouri, from Arkansas, and also many specimens from Alabama; which, for the present, I must put down as its northern limit.

General Remarks. Dr. Dekay was the first herpetologist who noticed it as a distinct species, and communicated his observations to Say and other naturalists, who regarded it only as a variety of the Coluber getulus, to which it certainly bears a striking general resemblance; yet on minute examination there will be found sufficient difference to constitute them distinct species. The head of this is smaller, with the snout much more prolonged than in the Coluber getulus; the colours are differently disposed; the body is shorter and the tail longer in proportion; and their geographical distribution is widely different: the Coluber getulus being found seven or eight hundred miles farther north on the Atlantic states than the Coluber Sayi; whereas, if they were but varieties, we might expect to find both animals in the same localities.

Coluber melanoleucus

12

J. Sera pinx.

Duval & Th. Phil.

COLUBER MELANOLEUCUS.—*Daudin.*

Plate XII.

Characters. Head elongated, oval; rostral plate large, shaped like an isosceles triangle, prolonged and rounded anteriorly; body, above white, more or less clear, and marked with subround black or dusky blotches, and covered with strongly carinated scales. Pl. 216—Sc. 60.

Synonymes. Pine Snake or Bull Snake, *Bart.*, Travels in Florida, &c., p. 276.
Coluber melanoleucus, *Daud.*, Hist. Nat. des Rept., tom. vi. p. 409.
Coluber melanoleucus, *Harl.*, Med. and Phys. Res., p. 122.
Pine Snake or Bull Snake, *Vulgo.*

Description. The head is rather oval and small for the size of the animal, with the snout elongated and projecting; the vertical plate is very large, pentagonal, broad before, where it is joined to four frontals, narrow and pointed behind, where it passes slightly in between the occipitals; the superior orbitals are broad, of the same length as the vertical, and of irregular pentagonal form, larger behind and smaller before, with two facets, one for the external frontal, and the other for the anterior orbital; the occipitals are polygonal, and most extensive in the transverse direction, and behind them are placed several small plates; there are four frontals, nearly of the same breadth, but the two internal are longest; the anterior frontals are trapezoid, and two in number; the rostral plate is an isosceles triangle, with its base in front greatly prolonged and rounded, and its apex directed upwards and backwards, separating the nasals, and deeply received between the anterior frontals; there are two nasal plates, the anterior irregularly pentagonal, lunated behind; the posterior oblong and concave in front

for the nostril, which is large, lateral, opens backwards, and is very near the snout; the anterior orbital plate is large, quadrilateral, and slightly concave behind, with a small loral plate in front; there are three posterior orbitals, nearly of the same size, the two upper are quadrilateral, the lower is triangular; the inferior wall of the orbit is completed by the fourth labial plate, of which there are eight on each side; the anterior is triangular; the second is pentagonal, and the remaining are quadrilateral. The eyes are of moderate size, with a dusky pupil and grey iris. The neck is not much contracted, and is covered behind the occiput with small smooth scales; soon, however, they become carinated, and increase in size.

The body is very long, though sufficiently robust to make it a strong snake; and is covered above with large, hexagonal, strongly carinated scales on the back, and smooth though still larger scales low down on the flanks; the belly is covered with very large and broad plates. The tail is terminated by a horny excrescence or point.

Colour. The plates of the head above are dusky in their centre, often tinged with olive, and are margined with dirty-white; the lips are white, with an olive or dusky bar at the junction of each plate; the throat is white.

The body and tail above are milky-white, more or less clouded, and marked with a vertebral series of oblong black blotches; a second series of blotches of similar colour and of equal length, but much more narrow, is placed on the flanks; the abdomen is pale cream-colour, with a regular series of subquadrate black blotches on each side near where the plates join with the scales; these blotches occupy portions of two abdominal plates, and are placed in general opposite each other, and usually at intervals of three plates: these blotches become more irregular at the tail, and finally disappear altogether.

Dimensions. Length of head, 2 inches; length of body to vent, 6 feet 2 inches; length of tail beyond vent, 13 inches; total length, 7 feet 3 inches; greatest

circumference, 6 inches. They however reach a greater size: I have seen one 9 feet in length. In the specimen here described there were 216 abdominal plates and 60 subcaudal scales.

Habits. The Coluber melanoleucus inhabits the pine forests along the sea coast, but I believe is not found far in the interior of the Atlantic states, though I have heard of its existence west of the Alleghanies. It feeds on rabbits, squirrels, birds, &c., and is timid and "inoffensive with respect to mankind;" though a large animal, it moves with great celerity, and is taken alive with much difficulty, as they frequently have large holes in the earth, to which they precipitately retreat when danger is apprehended. Bartram says, in the season of "*incubation*," it makes "a terrible hiss, resembling distant thunder;" which I have never heard, though I am well acquainted with the animal.

Geographical Distribution. This serpent abounds in the pine forests of New Jersey; though Daudin says Pallisot de Beauvais never saw it in Pennsylvania; where it is, however, common enough. From Jersey, which seems to be its northern limit, it passes through Maryland, Virginia, the Carolinas, Georgia and Florida, always preferring the same pine districts, from which circumstance its common name is derived. How far south-west it may reach, I cannot say, but it certainly has been observed in some of the states beyond the Mississippi river.

General Remarks. A good deal of doubt has arisen as to the propriety of continuing the name melanoleucus of Daudin, as his description is copied from Bartram, and is thought to be too short and imperfect to characterize any animal with certainty: hence some have proposed to erase it altogether from our catalogue of reptiles; yet it seems to me that, by proper investigation, it can be made clear to what animal he applied the epithet melanoleucus, and thus the name retained. Bartram travelled in Carolina and Florida, where he saw a large snake,—"perhaps the largest in North America,"—"pied black and white,"—and "called Pine Snake or Bull Snake;" all this agrees perfectly well with the animal now under consideration, and with no other.

1. It is the largest snake known to inhabit the United States.

2. Its colour, when the skin has been lately shed, is "pied black and white."

3. The common name Pine Snake is still applied to this serpent wherever it is found.

Coluber constrictor.

13.

Nys Martin del. P.S. Duval Lith. Phil.

COLUBER CONSTRICTOR.—*Linnæus.*

Plate XIII.

Characters. Head oval, long; snout prolonged and rather pointed; body and tail long and slender; colour above, uniform bluish-back; abdomen slate-colour, tinged with blue; chin and throat silvery-white, with occasional black spots. Pl. 176—Sc. 94.

Synonymes. Black Snake, *Catesby*, Carolina, &c., vol. ii. p. 48. pl. xlviii.
Coluber constrictor, *Linn.*, Syst. Nat., tom. i. p. 385.
Black Snake, *Kalm*, Trav., Foster's Trans., vol. ii. p. 202.
Black Snake, *Penn.*, Arct. Zool. Suppl., p. 92.
Le Lien, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 309.
Coluber constrictor, *Gmel.*, ed. Syst. Nat. Lin., tom. i. part iii. p. 1109.
Coluber constrictor, *Latr.*, Hist. Nat. Rept., tom. iv. p. 178.
Coluber constrictor, *Daud.*, Hist. Nat. des Rept., tom. vi. p. 402.
Coluber constrictor, *Shaw*, Gen. Zool., vol. iii. part ii. p. 464.
Coluber constrictor, *Fitz.*, Neue Class. der Rept., p. 57.
Coluber constrictor, *Harl.*, Med. and Phys. Res., p. 112.
Black Snake, *Vulgo.*

Description. The head is elongated, oval, with the snout somewhat prolonged and rather pointed; the vertical plate is pentagonal, broader and rounded in front, narrower and with an obtuse angle behind; the superior orbital plates are long, very large, projecting, and quadrilateral in form, rather larger posteriorly; the occipitals are also very large, irregularly pentagonal, broadest before, with three articulating facets for joining with the vertical, superior, and post-orbital plates; the frontals are pentagonal, with their internal borders broadest, and

narrower externally, where they pass in behind the nasal plates; the anterior frontals are subround; the rostral is rather elongated and pointed anteriorly, and is very regularly triangular, with its basis down and its apex upwards; there are two nasal plates, of which the anterior is quadrilateral and slightly concave behind; the posterior is nearly of the same size and form, but more semi-lunated or crescentic on its anterior margin, to accommodate the nostril; there are two anterior orbital plates, the inferior small, the superior very large, making a considerable portion of the front of the orbit, and then ascending between the frontal and superior orbitals to the same horizontal plane as the frontal plate; in front of it is a square loral plate, which joins it to the posterior nasal; there are two small posterior orbital plates, the upper is irregularly quadrilateral, the inferior is semi-lunated or crescentic; there are seven large irregularly quadrilateral labial plates on each side, increasing in size from the snout to the angle of the mouth, the third and fourth of which make the inferior wall of the orbit of the eye. The nostrils are lateral, very large and near the snout. The eyes are large and bright; the pupil black, and the iris of the darkest grey. The neck is contracted.

The body is very long, slender, and covered with large smooth hexagonal scales above, and with broad plates below. The tail is equally long and slender, and at times may be used as a prehensile instrument.

Colour. The whole superior surface of the Coluber constrictor is of beautiful bluish-black; the abdomen and tail are bluish-slate; while the chin and throat are pure silvery-white, sometimes marked with a few black spots.

Dimensions. Length of head, 1 inch 8 lines; length of body, 47 inches; length of tail, 16 inches; total length, 5 feet 3 inches and 8 lines. In the specimen above described there were 176 broad abdominal plates, with a double one before the vent, and 94 scales under the tail. These snakes are said at times far to exceed these dimensions; the longest I have ever seen was 6 feet 1 inch.

Habits. The Coluber constrictor is an extremely active snake, climbing with facility, and running with great rapidity; whence it is not uncommonly called the "Racer." The Black Snake frequents shady places, covered with thick shrubs, on the margins of streams or ponds of water; though it often leaves these coverts and seeks the borders of old fields, or rocks, or even the way-side, to bask in the sun. It feeds on mice, toads, &c., or on small birds; and, as it is an excellent climber, is frequently seen on trees in search of their nests. It is a bold and daring serpent, enters barns and out-houses without fear, and has been known to destroy young chickens. It is said to suffocate its prey, like the Boa constrictor, in its folds, which is at least doubtful; as I have often seen it take its prey both in the native state and in confinement, which it always did by seizing it with the mouth. In the breeding season it is extremely irascible, and will frequently attack persons passing at a distance of several steps; its tail then quivers with rage, making a quick vibratory motion, which in forests and among dry leaves sounds not unlike the Rattlesnake; it now elevates the head one or two feet from the ground, and darts upon its adversary; luckily its bite is harmless, and not more painful than the scratch of a pin. It will even descend from trees to attack its enemy if teazed: as Dr. Geddings and myself have more than once experienced when in search of reptiles; yet I have never seen it endeavour to twine itself around the legs, as is commonly supposed. Even in confinement it carries with it the same irascible temper, is easily provoked, quarrels with its fellow prisoners, and bites at whatever may be offered it.

The same power of charming its prey has been attributed to the Black as to the Rattlesnake, and with less appearance of reason; for this is a nimble animal, and can pursue his prey, while the Rattlesnake must lie in wait. It is remarkable that the birds most commonly found "charmed," according to Dr. Barton,* are the Cat Bird (Turdus carolinensis), or Red Winged Black Bird (Icterus phœniceus). These birds choose thick and shady places on the margins of streams for their residence, and generally build their nests on shrubs, as the alder, &c.; the latter

* Trans. Amer. Phil. Soc., vol. iv. p. 103.

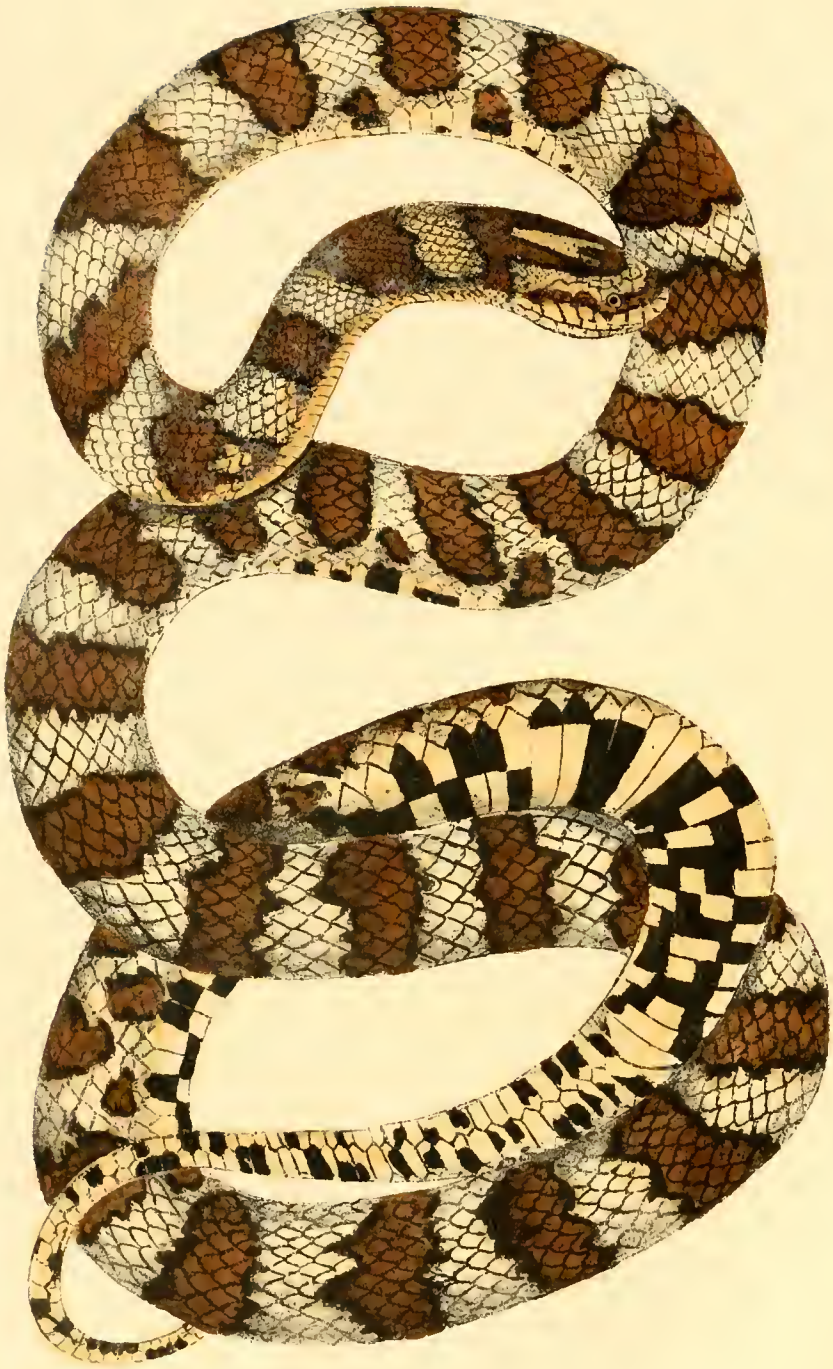
bird not unfrequently takes the precaution to select such bushes as are on small islands, or such as have their roots surrounded by water, and thus her home is more secure. Now the Black Snake chooses precisely the same localities, knowing, probably, the haunts of its prey. The snake begins the war by besieging the nest; the old bird, aware of its intention, attacks it with fluttering and uncertain motions, accompanied by a plaintive cry of distress, and is then said to be "charmed." The snake is at last either driven off, or it succeeds in its enterprise, captures the young, and not unfrequently the old bird is killed in the struggle and devoured; though the birds most commonly found in the stomach of the Black Snake are young and frequently unfledged. Sometimes the old bird by her cries calls in the assistance of her neighbours to drive away the aggressor: I have seen more than a dozen birds thus engaged with a large Black Snake that had probably just committed some depredation, but was now quietly stretched on a rock, basking in the sun; and it was not a little singular that birds of very different genera, and those seldom seen together, all united in this warfare against a common enemy, and finally compelled it to seek shelter among some low thick shrubs, by the violence of their assault.

Another remark of Dr. Barton, on "fascination," is worthy of attentive observation: he says, "as far as he could learn after many inquiries, that the season of the year at which any particular species of bird has been seen under the influence of the fascinating power of a serpent, corresponds with the exact time of their "*incubation*" or rearing their young."

Geographical Distribution. The Coluber constrictor is found in nearly all parts of the United States, and may be regarded as the most common of our serpents. Kalm met with it as far north as latitude 43; thence it reaches to the shores of the Gulf of Mexico: nor is it confined to the Atlantic states, but abounds in the western country; Say found it even as high as Engineer Cantonment on the Missouri, and I have received specimens from Louisiana and Arkansas.

General Remarks. Catesby first described the Black Snake, and accompanied his description with a very good figure. Kalm subsequently gave a long account of it in his travels, but he seems very credulous, and relates several absurd stories as to its habits. Linnæus, by some great oversight, in the tenth edition of his Systema Naturæ, confounds this animal with the Heterodon simus; which error, however, he corrected in his twelfth and last edition.*

* North American Herpetology, vol. i. p. 129.



Coluber eximius

H.

COLUBER EXIMIUS.—*Dekay.*

Plate XIV.

Characters. Head short; snout rounded; body above milk-coloured, with a triple series of dark spots; vertebral range largest, and transversely oval; lateral series smaller, subround, with a lighter spot in the centre; abdomen silvery-white, each plate marked with one or more quadrilateral black spots, so arranged as to give a tessellated appearance. Pl. 198—Sc. 47.

Synonymes. Coluber eximius, *Dekay,* manuscript.
Coluber eximius, *Harl.,* Med. and Phys. Res., p. 123.
Coluber calligaster, *Harl.,* Med. and Phys. Res., p. 122.
House Snake or Milk Snake, *Vulgo.*

Description. The head is short, with the snout rather broad and rounded; the vertical plate is short, very large, nearly triangular, broad in front, and acute angled behind, with two facets for joining with the occipital plates, which makes it obscurely pentagonal; the superior orbital plate is large, irregularly quadrilateral, broadest behind and slightly projecting; the occipital plates are large, very broad and pentagonal; there are two temporals, quadrilateral, of which the upper is smaller; the frontal plates are hexagonal and large, with their internal margins broadest; the anterior frontals are quadrilateral and broadest externally; the rostral plate is short, thick, and rounded in front and above, and concave below; the nasal plate is single, with the nostril in the centre, or has a slight deficiency above; it is elongated, hexagonal, and joined posteriorly with a small quadrilateral loral plate, situated in front of the anterior orbital, which is single and very large; there are two posterior orbitals, of quadrilateral form and nearly of equal size; there are seven labials on each side, quadrilateral, and increasing in size

from the rostral plate to the angle of the mouth; of these the third and fourth make the inferior wall of the orbit of the eye. The nostrils are large, near the snout and lateral, but open a little upwards. The eyes are large; the pupil dusky; the iris pale grey. The neck is slightly contracted.

The body is elongated, but tolerably robust, and covered with smooth, rather small, hexagonal scales above, and with broad plates below. The tail is rather short, thick at its root, but soon becomes cylindrical and smaller, ending in a horny tip.

Colour. The Coluber eximius resembles somewhat the Coluber guttatus in the disposition of its colours, though it varies greatly from it in its tints; the ground colour of the whole superior surface of the animal is a shining milky-white, often with a reddish tinge; the anterior part of the head is marked with a few not very distinct dusky spots, and has a well marked transverse dusky band reaching from the anterior extremity of one superior orbital plate to the other, and occupying about half the posterior part of the frontal plates; another line, smaller, but of similar colour, descends backwards to the angle of the mouth; the crown of the head, as well as its occipital region and neck, is occupied by a large dusky blotch, with a small white spot near its anterior border, and a larger one, elongated, resembling somewhat the letter V in its centre; this dark blotch is so arranged as to leave before it a transverse white bar, which includes the two posterior thirds of the superior-orbital plates, from the posterior part of which descends on each side over the temples a lateral line of similar colour to behind the angle of the mouth. The upper lip is milky-white, with the posterior part of each plate margined with dusky. The body above is milky-white, often tinged with red; along the vertebral line is a series of ovoid dusky blotches, sometimes with irregular margins, and always bordered with black, and most extensive in the transverse direction, in which it differs from the Coluber guttatus. These blotches are sometimes so extensive that they give the serpent an appearance of being banded with black and white: alternating with these dusky bars on the flanks

is a second series of subround spots, smaller and blacker than those of the back. There is often a third series lower down and still smaller.

The abdomen is silvery-white, each plate being marked with one or two black spots; if there is a single spot on the plate, it is oblong quadrilateral, large, and placed near the centre; when there are two spots, they are regularly quadrilateral, and are situated near the lateral extremities of the plate. These spots give to the whole inferior surface of the animal a beautiful tessellated appearance of black and white; which well merits the name of calligaster, said by Harlan to have been given by Say to the western variety of this animal.

Dimensions. Length of head, 11 lines; length of body, 30 inches; length of tail, $5\frac{1}{2}$ inches; total length, 36 inches 5 lines. In the specimen here described there were 198 abdominal plates, and 47 subcaudal scales. This animal is said at times to exceed 4 feet in length.

Habits. The Coluber eximius is gentle in its habits, feeding on field-mice, various insects, &c. It approaches without fear the habitations of men, and is hence not uncommonly called the House Snake; it also frequents dairies and cellars where milk is kept; and this, from a mistaken notion of its robbing the dairy-women, has given rise to another name, "Milk Snake."

Geographical Distribution. The range of the Coluber eximius seems to be confined to the northward of the 37th parallel of latitude; south of this, in the Atlantic states, I have never heard of its existence; its place is there supplied by another and closely allied species, the Coluber guttatus. North of this line it is however abundant; I have seen it in Maine and Rhode Island; Dr. Storer in Massachusetts; Dr. Dekay in New York; Dr. Hallowell in Pennsylvania; Dr. Geddings in Maryland. West of the Alleghanies the Coluber eximius was observed by Dr. Pickering in Illinois, and by Say high up the Missouri; how far south it may run down the valley of the Mississippi, I have at this moment no means of determining; but it may be remarked that reptiles are there much less confined in their geographical range than they are in the Atlantic states.

General Remarks. The Coluber eximius, though so common in the northern states, was only a short time since recognised and described as a distinct species by Dr. Dekay, an excellent herpetologist, and one who has done much in ophidiology. Say seemed to consider the serpent he observed in Missouri as new; but I am not aware that he described it as such: Dr. Harlan, however, gave a description of it from specimens in the Philadelphia Museum, and under the name calligaster, from the beautiful arrangement of colours on the belly. I have examined these specimens, and can pronounce them identical with the Coluber eximius, having a few plates more.

The general resemblance between the Coluber eximius and the Coluber getulus is so great as to lead several excellent naturalists to consider them identical; yet there are many differences, which, though small if taken alone, when combined are sufficient to establish these animals as separate and distinct species. To give a better notion of their differences, I have had the two animals drawn nearly in the same position.

1. The head of the Coluber eximius is shorter and more rounded in front.

2. The body is shorter in proportion, and the tail much more so, and is thicker. *See number of plates and scales above.*

3. The disposition as well as the tint of the colour is entirely different in life; but when the two animals have been kept in alcohol, then the colours become more alike.

4. They differ in habits; the Coluber guttatus selects old fields and dry places, while the Coluber eximius prefers rocky or shady spots for his abode.

5. They differ also much in their geographical distribution; the one being peculiar to the south, the other as much so to the north.

Coluber vernalis

15.

J.E. Richard del.

P.S. Duval Lith. Phila.

COLUBER VERNALIS.—*Dekay.*

Plate XV.

Characters. Head small, oval; snout rounded; body elongated, cylindrical, covered above with smooth, oblong, rhomboidal scales; grass-green above, yellowish-white below. Pl. 128—Sc. 89.

Synonymes. Coluber veralis, *Dekay*, MS.
Coluber vernalis, *Harl.*, Med. and Phys. Res., p. 124.

Description. The head is small, oval, with the snout somewhat rounded; the vertical plate is pentagonal, very large, and broadest in front; the superior orbital is elongated, quadrilateral, narrow before, broader behind, and slightly projecting over the eye; the occipital plates are very large, pentagonal, and broadest before; the frontals are large, broad and pentagonal; the anterior frontals are smaller and quadrilateral; the rostral plate is short, broad, pentagonal, rounded above and in front, and slightly concave below; there are two nasal plates, elongated and quadrilateral; the anterior lunated behind, and the posterior concave before, to accommodate the nostril, which is large, lateral, and near the snout; there are two quadrilateral anterior orbitals, with a single square loral plate; the posterior orbitals are two in number, small and quadrilateral; the inferior wall of the orbit is completed by the third and fourth superior labials, of which plates there are seven on each side, quadrilateral, and increasing in size from the chin towards the angle of the mouth. The eyes are large and bright; the pupil black; the iris golden. The neck is contracted.

The body is cylindrical, and covered above with small elongated, rhomboidal,

smooth scales, and with plates below. The tail is long, thick at its root, but soon becomes slender.

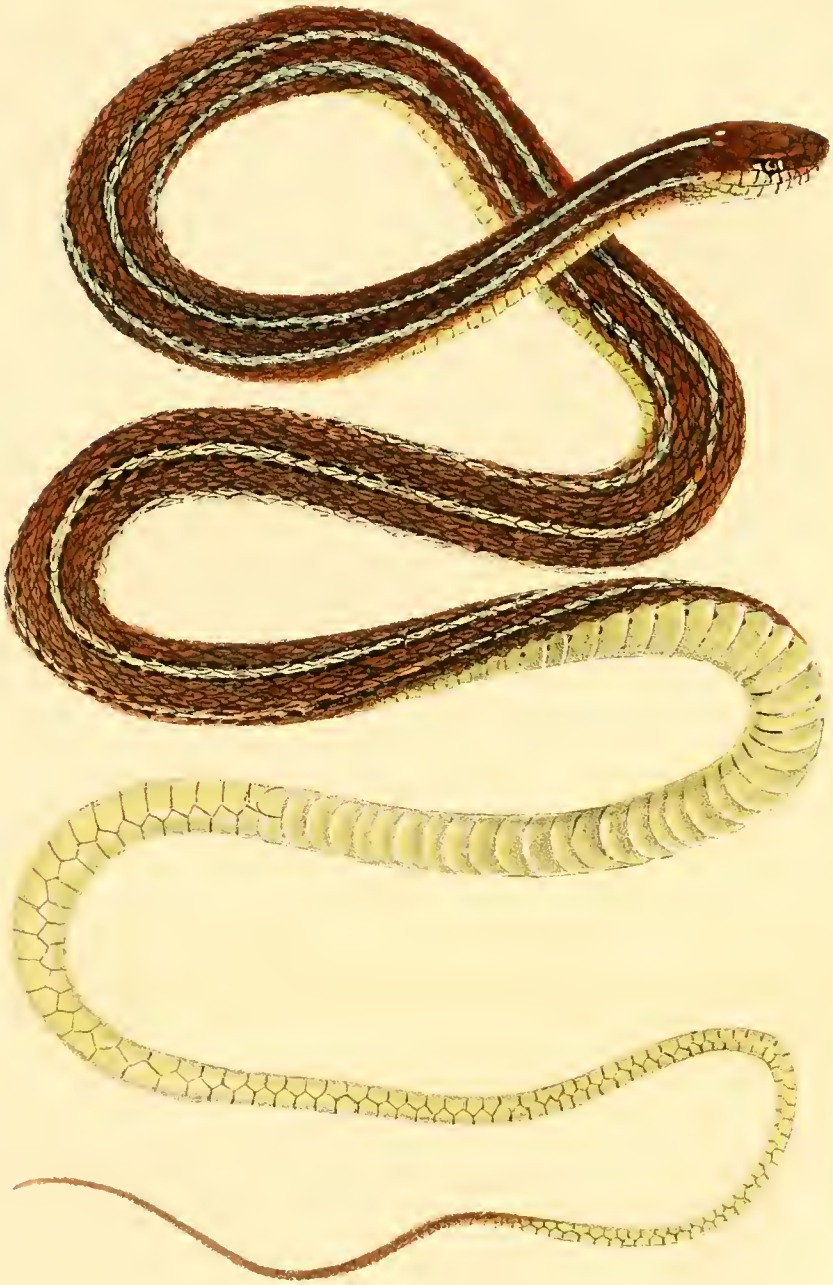
Colour. The head above is beautiful grass-green; the jaws are yellowish-white, tinged with green. The body and tail above are coloured like the head; the belly is yellowish-white.

Dimensions. Length of head, 7 lines; length of body to vent, 12 inches; length of tail beyond the vent, 7 inches; total length, 19 inches 7 lines. They sometimes reach a greater size. In the specimen here described there were 128 abdominal plates and 89 subcaudal scales.

Habits. This is a very gentle animal, and can be handled with impunity; it seeks meadows of high grass, where crickets and grass-hoppers abound, on which it feeds, and is mostly found on the ground; though I have at times seen it stretched on the branches of low shrubs, as the dwarf willow, &c.

Geographical Distribution. The Coluber vernalis seems peculiarly a northern animal; it is first seen in Maine; it is abundant in Massachusetts, Connecticut, New York and Pennsylvania; but I have never yet heard of its existence as far south as Virginia.

General Remarks. This serpent, from its similarity of colour, seems to have been confounded with the Coluber æstivus by herpetologists, until Dr. Dekay observed that its scales were smooth,—that it was a smaller animal,—that the proportion of its different parts were not the same,—and that it was entirely a northern animal; and applied to it the specific name of vernalis.



Coluber saurita

17.

16

Ch.r Rogers, pinx.t

P.S Duval Lith. Phil.a

COLUBER SAURITA.—*Linnæus.*

Plate XVI.

Characters. Head oval, elongated; snout prolonged, though rather rounded at the apex; body long, slender; tail very long, thin, pointed at tip; colour, above dusky brown, trilineate, vertebral line pale yellow, often tinged with green; lateral lines clouded yellowish-white; abdomen pale yellow, tinged with green, immaculate. Pl. 165-167—Sc. 117-121.

Synonymes. Riband Snake, *Catesby*, Carolina, &c. vol. ii. p. 50, pl. l.
Coluber saurita, *Linn.*, Syst. Nat., tom. i. p. 385.
Coluber saurita, *Gmel.*, ed. Syst. Nat. Lin., tom. i. part iii. p. 1109.
Le saurite, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 308.
Coluber saurita, *Latr.*, Hist. Nat. Rept., tom. iv. p. 178.
Coluber saurita, *Daud.*, Hist. Nat. des Rept., tom. viii. p. 104, pl. 81, fig. 2.
Coluber saurita, *Shaw*, Gen. Zool., vol. iii. part ii. p. 532.
Coluber proximus, *Say*, Long's Exp. to Rocky Mountains, vol. i. p. 187.
Coluber saurita, *Fitz.*, Neue Class der Rept., p. 53.
Coluber saurita, *Harl.*, Med. and Phys. Res., p. 115.
Coluber proximus, *Harl.*, Loc. Cit., p. 116.
Riband Snake at the south, Swift Garter Snake at the north, *Vulgo.*

Description. The head is ovoid, long, and rather large in proportion to the body, with the snout somewhat prolonged, though rounded at its apex; the vertical plate is large, elongated, and hexagonal; the superior orbitals are of equal length with the vertical, quadrilateral, broader behind, and projecting slightly over the eye; the occipitals are irregularly triangular, with all their angles rounded, and are broadest behind; the frontal plates are broad and

pentagonal; the anterior frontals are irregularly quadrilateral, narrow in front, with their posterior and external angles pointed, but not so prolonged as in the Coluber Dekayi; the rostral plate is rather small and pentagonal; there are two nasals, the anterior of which is small and regularly quadrilateral; the posterior is also small, and irregularly pentagonal, and hollowed before for the nostril, and has a small loral plate between it and the anterior orbital, which is lunated and very large; there are three small posterior orbitals; and the inferior wall of the orbit is completed by the fourth and fifth superior labials, of which plates there are seven large ones: the anterior pentagonal; the second quadrilateral; the third, fourth and fifth pentagonal; the sixth again quadrilateral; and the seventh triangular. The nostrils are near the snout, lateral, but open obliquely upwards. The eyes are of moderate size; the pupil is dusky, with the iris yellowish-grey and brilliant. The neck is contracted, much smaller than the head, and covered with small, hexagonal, carinated scales.

The body is very long, slender, and covered above with scales of similar form to those of the neck; but larger and still more so on the sides, and with plates below. The tail is long, thin, and terminates in a point.

Colour. The head above is light olive; the labial plates have a greenish-yellow tinge, marked at their place of union with a dusky line; each occipital plate is marked with a small yellow spot; this mark is, however, not constant: I have never seen it wanting in the southern animal, but it is not always found in the northern, and in some rare examples it may be double: the large anterior orbital plate is olive in front, but its posterior half is yellow, which gives a peculiar physiognomy to the serpent.

The body above is dusky if seen at a distance, but if examined closely and in a certain light it appears chocolate-brown, often tinged with olive, and marked with three longitudinal lines; the vertebral one begins between the occipital plates, is of pale greenish-yellow, and becomes obsolete an inch or two from the tail; this line occupies the vertebral scale, and the half of one scale on each side has

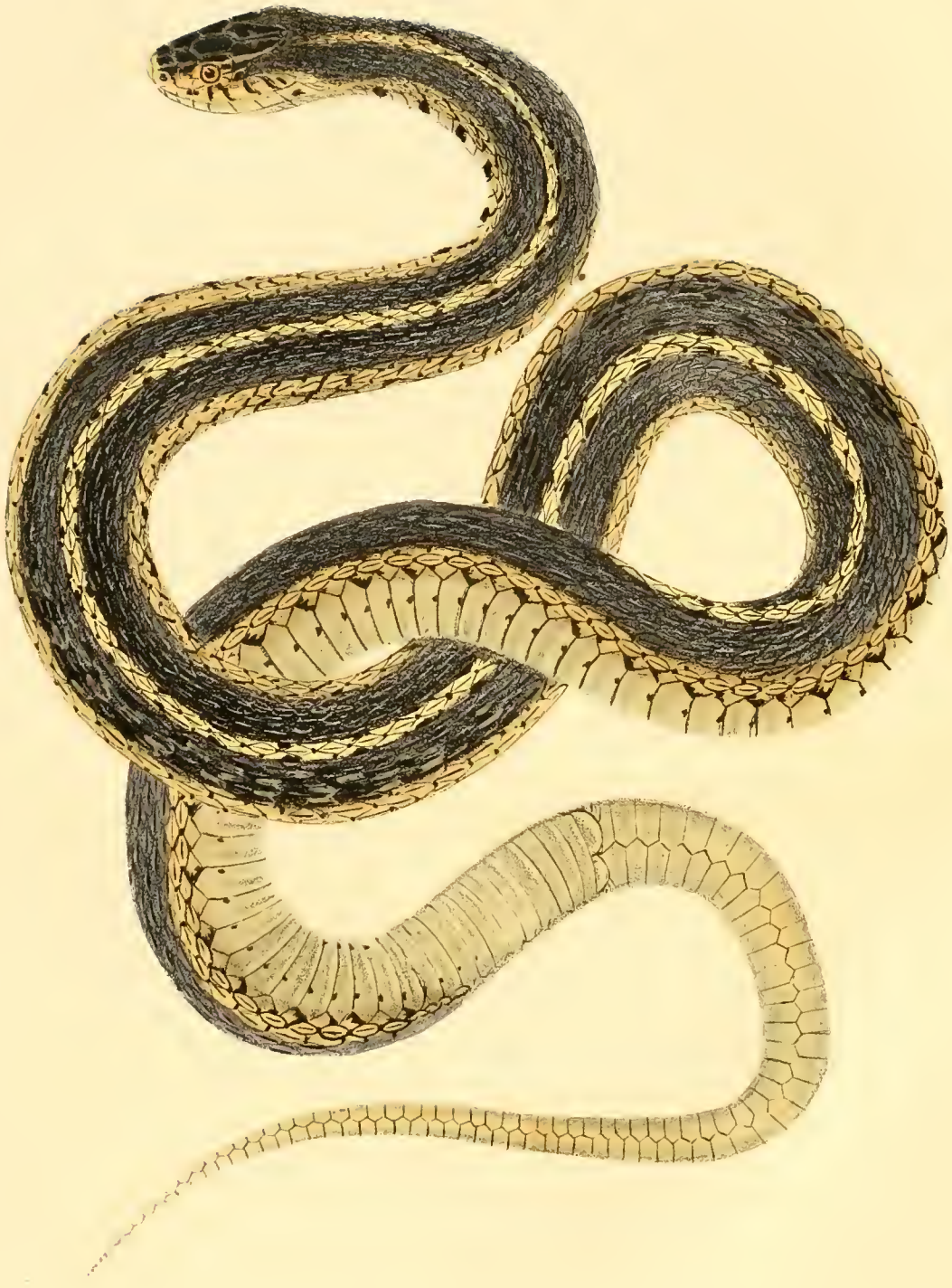
a straight border throughout its whole extent; the lateral line or band is broader, including two scales, with its margins less regular, and of a dusky greenish-white colour; on each side of this line are dusky or black, small rhomboid spots, sometimes arranged in a row; the lateral lines or bands are broader, more or less distinct, including two scales or more; they are of dirty yellowish-white, tinged with green, and have not the same regular margin; the abdomen is shining creamy white, with a tinge of green. The tail is coloured like the body, but the lateral lines only continue for a short distance behind the vent.

Dimensions. Length of head, 10 lines; length of body, 23 inches; length of tail, 12 inches; total length, 35 inches 10 lines. This animal at times reaches the length of nearly four feet; in general, however, they are found between two and three feet long. In the specimen here described, there were 165 abdominal plates, and 117 subcaudal scales; but this number is by no means constant, as I have seen by comparing several animals; among others the following, now in the Museum of the Academy of Natural Sciences at Philadelphia:

1. A specimen from Missouri, given by Mr. Eckhart: abdominal plates, 156; subcaudal scales, 121.—2. One from Pennsylvania, by Dr. Allison: abdominal plates, 150; subcaudal scales, 112.—3. One from Delaware, by Dr. Green: abdominal plates, 156; subcaudal scales, 93; tail imperfect.—4. One from Key West: abdominal plates, 160; subcaudal scales, 125.—5. One from South Carolina: abdominal plates, 147; subcaudal scales, 117.

Geographical Distribution. The Coluber saurita has a wide range. I have seen it in most of the states from Maine to Georgia; and have received specimens from Louisiana, Arkansas and the far west; and, if I am correct in supposing this animal identical with the Coluber proximus of Say, which I doubt not, then does it reach the very foot of the Rocky Mountains. Say observes the Coluber proximus only differs from our animal "in the numerical proportion that its subcaudal scales bear to its abdominal plates;" which is not sufficient of itself to distinguish animals so closely allied.

General Remarks. The first account of this serpent may be seen in Catesby's History of Carolina, &c.; where it is figured and described under the name of Riband Snake; which it bears to the present time with us among all classes of people. Linnæus received it into the twelfth edition of the Systema Naturæ, and applied to it the specific name saurita, which has been universally adopted by naturalists; nor can there be a doubt of his meaning, for his only references are to Catesby and to Dr. Garden: although the number of subcaudal scales he gives does not agree with my observation, yet this might have been the result of accident in the specimen that he examined.



Coluber sirtalis

17.

J. H. Brenard, del.

P.S. Duval, Lith. Phila

COLUBER SIRTALIS.—*Linnæus.*

XVII

Plate XVI.

Characters. Head oval, broad, a yellow spot on each occipital plate; body thick, dusky above, marked with three longitudinal yellow lines; abdomen greenish-yellow, plates with a black blotch near their lateral extremities. Pl. 141—Sc. 70.

Synonymes. Coluber sirtalis, *Linn.*, Syst. Nat., tom. i. p. 383.
Coluber bipunctatus, *Latr.*, Hist. Nat. Rept., tom. iv. p. 85, pl. 30, fig. 2.
Coluber sirtalis, *Gmel.*, ed. Syst. Nat. Linn., tom. i. part iii. p. 1107.
Coluber sirtalis, *Latr.*, Hist. Nat. Rept., tom. iv. p. 69.
Coluber sirtalis, *Daud.*, Hist. Nat. des Rept., tom. vii. p. 146.
Coluber sirtalis, *Shaw*, Gen. Zool., vol. iii. part ii. p. 535.
Coluber sirtalis, *Harl.*, Med. and Phys. Res., p. 116.
Striped Snake, *Vulgo.*

Description. The head is moderately large, flattened, oval, elongated, with the snout rounded; the vertical plate is very large, pentagonal, broad in front, and rounded where it joins the frontal, and with an angle posteriorly to touch the occipitals; the superior orbitals are single, oblong, and projecting, narrowest in front; the occipitals are large and pentagonal, broad in front, and joined to the superior orbital, as well as to the two upper posterior orbital plates; the frontals are large, broad, and pentagonal; the anterior frontals are also broad, but quadrilateral, with their posterior and inferior angle prolonged; the rostral plate is heptagonal, concave on its inferior margin, for the mouth; there are two nasal plates, of which the anterior is largest and semilunated, the posterior is pentagonal; behind this is a loral plate, connected above to the frontal, and

posteriorly to the anterior orbital, which is very large and oblong, ascending up between the superior orbital and the frontal plates; there are three posterior orbitals, irregularly quadrilateral, and nearly of the same size; the upper one passes in between the superior orbital and the occipital plates; the inferior border of the orbit is made up of the third and fourth labials, of which plates there are seven on each side, quadrilateral and large; there are two temporal plates, the anterior largest. The nostrils are lateral and large. The eyes are large; the pupil black; the iris yellowish-grey. The neck is contracted.

The body is long, but tolerably robust, covered with strongly hexagonal carinated scales above and with broad plates below. The tail is long, thick at the root, but soon becomes slender, and terminates in a point.

Colour. The head above is dusky, with a tinge of olive; each occipital plate being marked with a minute yellow spot; the upper lip is greenish-straw colour, and marked with a dark line at the junction of its plates. The body and tail above is dusky, with a tinge of olive, lighter on the sides, with three longitudinal lines of pale yellow; the vertebral begins at the distance of three or four scales from the occipital plates, and terminates about midway on the tail, and includes one whole scale, and the half of the two adjoining scales on each side; the lateral lines begin behind the temples, and are smaller, including the half of two adjoining scales only; between the vertebral and lateral lines are numerous small quadrate black spots, disposed in longitudinal series, the spots of the different series alternating with each other, and when the scales are separated white specks appear between them; beneath the lateral lines the colour is paler; the abdomen is pale straw colour, with a tinge of green; and each plate is marked with a small black spot near its junction with the scales; these spots form a longitudinal series; sometimes there are two rows of these black spots on each side, the smaller being in the inner one.

Dimensions. Length of head, 13 lines; length of body, 22 inches; length of tail, $8\frac{1}{4}$ inches; total length, 29 inches 6 lines. This animal at times reaches

the length of nearly four feet; in general, however, they are found between two and three feet long. In the specimen here described there were 165 abdominal plates, and 117 subcaudal scales.

Habits. This serpent is extremely gentle in its disposition, and can be handled without the least fear of injury; indeed I have never known it attempt to bite. It prefers shady places for its abode, and is often found among high grass, feeding on toads and other small reptiles, &c.

Geographical Distribution. The Coluber sirtalis is found in all the Atlantic states, from Maine to Florida inclusive; it inhabits also the country west of the Alleghany mountains. Say observed this animal high up the Missouri river; and I have seen specimens from Mississippi, Louisiana, Arkansas, &c.

General Remarks. The first notice of this serpent is in the tenth edition of the Systema Naturæ of Linnæus, who described it on the authority of Kalm. His account is so short and unsatisfactory that many herpetologists have thought it advisable to expunge this name altogether from the catalogue of North American reptiles; yet if we follow the early history of this animal we shall find the specific name sirtalis sufficiently intelligible, and thus avoid the inconvenience of a new one. Kalm travelled over a certain portion of the United States, in which, to this time, only two snakes have been found marked with three yellow longitudinal lines; and the herpetology of this section of our country is perhaps as well known as that of France. Now Linnæus himself gave the specific name sirtalis to one; and many years after that, of saurita to the other, well knowing both; of the latter animal there can be no doubt, as his only references are to Catesby and Garden; consequently the specific name sirtalis can only be applied to the serpent now under consideration. Schoepff, doubtless, had the Coluber sirtalis in view when describing his Coluber tænia (Die Band Schlange); but his name cannot be retained, as that of Linnæus has the right of priority.

Coluber ordinatus

18.

P.S.Duval Lith Phil.a

COLUBER ORDINATUS.—*Linnæus.*

XVIII

Plate VIII.

Characters. Head moderate, flattened; body robust, greenish-olive above, with five longitudinal series of small subquadrate black spots, the series alternating with each other; abdomen pale-green, tinged with yellow, a dark spot near the lateral extremity of each plate. Pl. 143—Sc. 66.

Synonymes. Little Green Garter Snake, *Catesby*, Carolina, &c., vol. ii. p. 53, pl. liii.
Coluber ordinatus, *Linn.*, Syst. Nat., tom. i. p. 379.
Coluber ordinatus, *Gmel.*, ed. Syst. Nat. Linn., tom. i. part iii. p. 1097.
L'Ibibe, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 322.
Coluber ordinatus, *Latr.*, Hist. Nat. Rep., tom. iv. p. 71.
Coluber ordinatus, *Daud.*, Hist. Nat. des Rept., tom. viii. p. 181.
Coluber ordinatus, *Fitz.*, Neue Class der Rept., p. 53.
Coluber ordinatus, *Harl.*, Med. and Phys., p. 113.
Grass Snake, *Vulgo.*

Description. The head is flattened, oval, with the snout rather truncated; the vertical plate is pentagonal, broadest before; the superior orbitals are oblong, quadrilateral, broadest posteriorly; the occipitals are large, irregularly pentagonal, and broadest anteriorly; there are two regular pentagonal frontal plates, broadest internally, and two anterior frontals, irregularly triangular, with their bases rounded and directed outwards; the rostral is short and irregularly pentagonal, most extensive and concave below; there are two nasal plates, the anterior larger, quadrilateral, and truncated posteriorly; the posterior is smaller and crescentic in form; the nostrils and near the snout lateral, and open a little backwards; there is a single anterior orbital plate, pentagonal, and most extensive vertically,

projecting in between the superior orbital and frontal plates; there are three small quadrilateral posterior orbitals; the inferior wall of the orbit is completed by the third and fourth labials, of which plates there are seven on each side, quadrilateral to the fourth; the fifth and sixth are pentagonal, the seventh triangular and smaller. The eye is rather large; the pupil dusky, and the iris greenish-yellow. The neck is contracted.

The body is elongated, but robust, flattened, and covered with strongly carinated hexagonal scales above, and with plates below.

Colour. The head is dusky above, tinged with green; the lips are lighter, with a black or dusky bar at the place of junction of the plates. The body and tail above are green, tinged with olive, sometimes with an indistinct vertebral line of lighter colour, which does not seem to be the result of age; there are five longitudinal series of small quadrate black spots, generally including parts of two or three adjoining scales; the spots of the different series alternate with each other, or are arranged in a regular quincunx; at the tail they are less regular. The throat and abdomen are greenish-yellow, and each plate is marked near its lateral extremities with a semicircular black spot; which, as they are placed in regular succession, make two longitudinal series along the abdomen. The tail is clouded yellow below, becoming more and more dusky towards the tip.

Dimensions. Length of head, 1 inch; length of body to vent, 18 inches; length of tail beyond vent, $6\frac{1}{2}$; total length, $25\frac{1}{2}$ inches. In the animal here described, there were 143 abdominal plates, and 166 subcaudal scales.

Habits. The Coluber ordinatus prefers meadows and pastures, where the grass is luxuriant, and preys on such insects, or small reptiles, as may select the same localities.

Geographical Distribution. This animal inhabits the southern states, as far north as Maryland; beyond this I have no evidence of its existence.

General Remarks. The first positive notice of this serpent may be seen in Catesby's History of Carolina, &c.; where it is described and figured as the Green Spotted Snake. The figure is tolerable, though it represents the animal with a well marked light coloured vertebral line, which certainly is not very common. Catesby says it grows to nearly four times the size of his figure; which would make it a serpent of nearly four feet in length. He is doubtful about considering it different from the Spotted Riband Snake (pl. 51); which latter I have not been able to identify certainly with any of our serpents, though it seems most to resemble the Coluber Dekayi. Catesby, as usual with most of his snakes, makes it a "great robber of hen-roosts—sucking eggs," &c., which is doing great injustice to the animal. Daudin says, "without doubt the Couleuvre biponctuée of Bosc must be referred to this animal," to which I can by no means consent, never yet having seen the two occipital spots that characterize the animal described by Bosc, while they are always present in the Coluber sirtalis; which was most probably the serpent from which he took his description of the Coluber bipunctatus.

Coluber sipeolon

19.

Tho.s M.Logan M.D. pinx.t

P.S.Duval, Lith. Phil.a

COLUBER SIPEDON.—*Linnæus.*

Plate XIX.

Characters. Head large, oval, flattened above; snout rounded; body dusky above, with a row of subquadrate reddish-brown blotches on the flanks, connected by a transverse dirty white bar, margined with black. Pl. 145—Sc. 67.

Synonymes. Coluber sipedon, *Linn.*, Syst. Nat., tom. i. p. 379.
Le sipéde, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 305.
Coluber sipedon, *Gmel.*, ed. Syst. Nat. Linn., tom. i. part iii. p. 1098.
Coluber sipedon, *Latr.*, Hist. Nat. Rept., tom. iv. p. 177.
Coluber sipedon, *Daud.*, Hist. Nat. des Rept., tom. vii. p. 148.
Coluber sipedon, *Shaw*, Gen. Zool., vol. iii. part ii. p. 496.
Coluber sipedon, *Harl.*, Med and Phys. Res., p. 114.
Coluber cauda shistosus, *Harl.*, Med. and Phys. Res., p. 124.
Water Snake, *Vulgo.*

Description. The head is large, oval, flattened above, with the snout rounded; the vertical plate is pentagonal, broad, and nearly of the same size throughout; the superior orbitals are elongated, narrow, quadrilateral, broadest behind; the occipital plates are very large, oblong, and broadest before; the frontals are subhexagonal and large; the anterior frontals are smaller, and of subtrapezoidal form; the rostral plate is hexagonal, short, small, truncated in front, rounded above and concave below; there are two quadrilateral nasals, the anterior lunated behind, and the posterior crescentic in front, to form the nostrils, which are lateral and near the snout; the anterior orbital plate is single, pentagonal, elongated, most extensive vertically, passing in between the frontal and superior orbital, though it does not completely separate them as in the Coluber ordinatus;

in front of this is a small quadrilateral loral plate; there are two subround posterior orbitals, behind which are two oblong large temporals; the inferior wall of the orbit is completed by the fourth and fifth labials, of which plates there are eight on each side, all more or less regularly quadrilateral. The eyes are rather large; the pupil black, with the iris grey. The neck is contracted, and covered with small, subhexagonal, strongly carinated scales.

The body is long but robust, and covered with scales similar to those of the neck, but much larger, and slightly notched posteriorly, and with broad plates below. The tail is large, and rather subtriangular in form, broader below and narrower above.

Colour. The head is dusky above; the jaws are olive, tinged with yellow, and varied with dusky at the junction of the labial plates; the lower jaw is of lighter colour. The body above is dark brown, and on each flank is a series of large subquadrate and reddish-brown spots, extending to the abdominal plates; from the superior margin of these blotches runs a light coloured transverse band to connect with the spots of the opposite side; these bands are margined with black both before and behind; in the young snake the bands are very beautiful, but in the adult they become more or less indistinct, but can always be seen in the middle, except in some varieties, where they are wanting altogether. The throat is dirty-white; the ground colour of the belly is dirty-white, often with a reddish-brown tinge, the different plates being marked with small waving lines, clouded with dusky, and most so near the tail, where the markings both above and below are finally lost.

Dimensions. Length of head, $1\frac{1}{4}$ inches; length of body, 28 inches; length of tail, 8 inches; total length, $37\frac{1}{4}$ inches. They are not unfrequently seen of greater dimensions. In the specimen here described there were 145 abdominal plates, and 67 subcaudal scales.

Habits. The Coluber sipedon is not unlike the Coluber fasciatus of the south

in its habits, of which indeed it seems the northern representative; it feeds on frogs, toads, &c., and is commonly found in damp places in or near water; yet I have never seen them resting on the low branches of trees that overhang the water, as is usual in our southern Water Snakes.

Geographical Distribution. This serpent is common in the stagnant or slow moving waters of the northern or middle states; I have seen them on the Atlantic border from New Hampshire to Delaware.

General Remarks. I have often doubted whether this serpent were the Coluber sipedon of Kalm; for his description is so short and imperfect as to characterize no one animal with certainty; and besides, imperfect as it is, it by no means applies in general to the serpent now under consideration, as may be seen by a reference to the colours above. The only way in which we can reconcile Kalm's description with the animal is to suppose that he observed such snakes as had the transverse bars indistinctly marked, which not unfrequently happens in old animals; but then these bars may even then be seen if the skin be carefully washed; or he might have seen a rare variety of the Water Snake, the C. cauda shistosus of Harlan, which Dr. Pickering has observed in the vicinity of Philadelphia.

Coluber rhombomaculatus

20.

J.H. Richard del

P.S. Duval Lith.

COLUBER RHOMBO-MACULATUS.

Plate XX.

Characters. Head short, small; body elongated, covered with smooth scales above and plates below; superior surface chestnut-brown, with a vertebral series of rhomboid light brown spots; abdomen salmon-coloured. Pl. 211—Sc. 45.

Description. The head is small, short, with the snout truncated; the vertical plate is broad and regularly pentagonal, acute angled posteriorly; the superior orbitals are elongated, quadrilateral, broader behind, narrower before, and of the same length as the vertical, and project but slightly over the eye; the occipitals are large, pentagonal, and receive the acute angle of the vertical plate; the frontals are large, pentagonal, broad above and narrow below; the anterior frontals are smaller, quadrilateral, and larger below than above; the rostral plate is pentagonal, blunt before, broadest and slightly concave below; there are two nasal plates, quadrilateral, nearly of the same form and size; one is lunated before and the other behind; the anterior orbital plate is single, quadrilateral, slightly lunated behind, and large, with a square loral plate in front; there are two pentagonal posterior orbitals, the upper rather larger; the inferior wall of the orbit is completed by the third and fourth labial plates, of which there are six on each side, increasing in size from the snout to the angle of the mouth; the first is trapezoidal, the second quadrilateral, and the rest are all pentagonal. The nostrils are lateral near the snout, and open a little upwards and backwards. The eyes are rather small; the pupil dusky, with the iris hazel. The neck is not contracted.

The body is elongated, cylindrical, covered above with smooth hexagonal

scales, largest on the flanks, and with broad plates below. The tail is short, thick at the base, but soon becomes small, and terminates in a horny point.

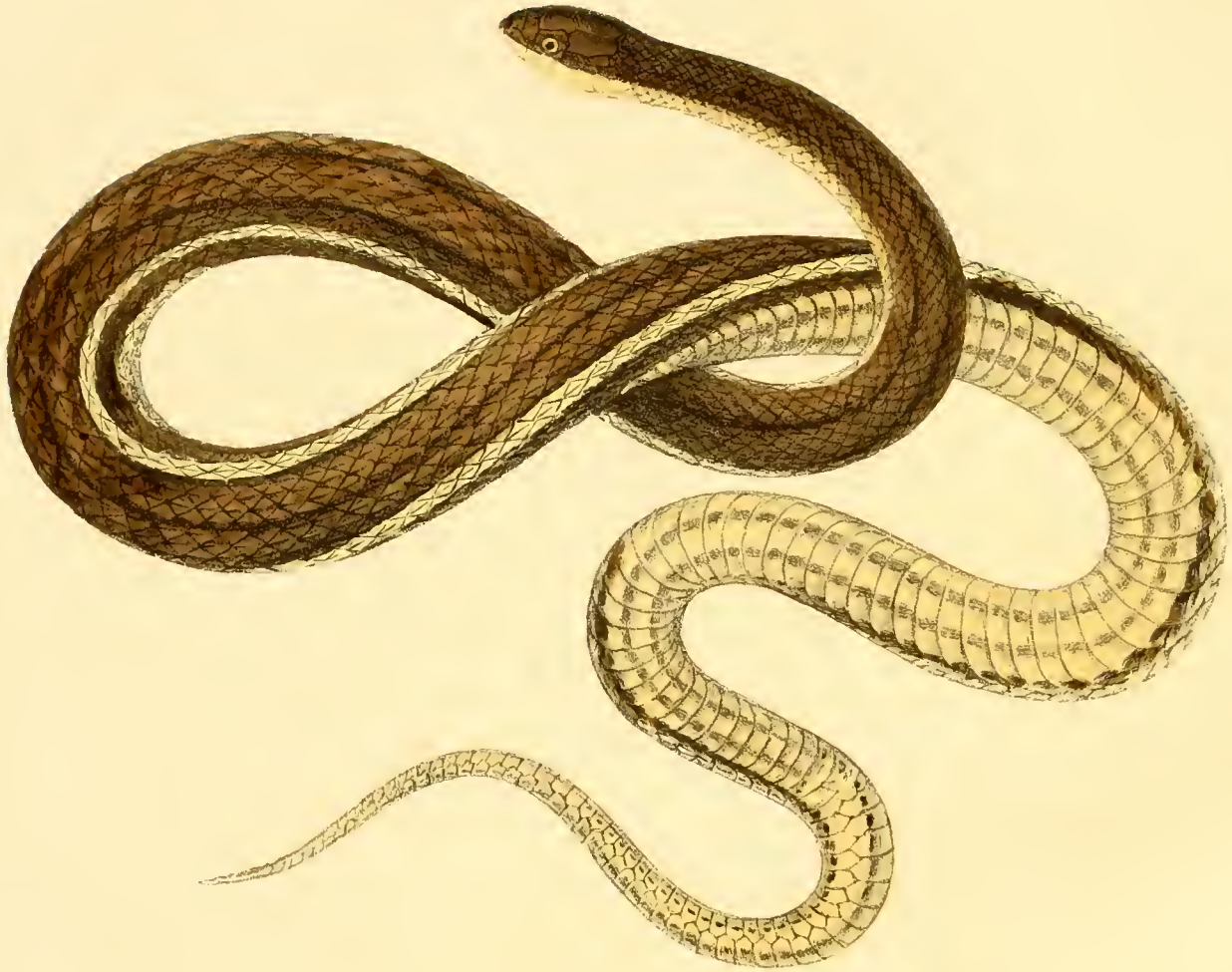
Colour. The head above is uniform chestnut-brown; the lips are lighter, with a dark line at the place of junction of the several plates. The body and tail are chestnut-brown, with vertebral rhomboid spots of light reddish-brown; these spots near the tail have a narrow dusky margin; the throat, as well as the belly and tail, are salmon-coloured, more or less bright.

Dimensions. Length of head, 10 lines; length of body to vent, 24 inches; length of tail beyond the vent, 4 inches; total length, 28 inches 10 lines. The specimen here described had 211 abdominal plates and 45 subcaudal scales, with a horny tip at the tail.

Habits. I am unacquainted with the habits of this animal, never having seen but two specimens.

Geographical Distribution. As yet I can give only Georgia and Alabama as the residence of this animal.

General Remarks. To my friend Professor Horner, of the University of Pennsylvania, I am indebted for the first specimen of this serpent that I ever saw, which he received from Georgia.



Coluber leberis

21.

J. Newsam. del.

P.S. Duval, Lith Phil.ª

COLUBER LEBERIS.—*Linnæus.*

Plate XXI.

Characters. Head rather small, elongated, oval; body above dusky olive-brown, with three black lines; abdomen pale yellow, with four dusky lines; scales strongly carinated. Pl. 143—Sc. 70.

Synonymes. Coluber leberis, *Linn.*, Syst. Nat., tom. i. p. 216, ed. x.
Coluber leberis, *Gmel.*, ed. Syst. Nat. Linn., tom. i. part iii. p. 1086.
Vipera leberis, *Latr.*, Hist. Nat. Rept., tom. iv. p. 8.
Vipera leberis, *Daud.*, Hist. Nat. des Rept., tom. vi. p. 218.
Coluber leberis, *Shaw*, Gen. Zool., vol. iii. part ii. p.
Coluber septemvittatus, *Say*, Jour. Acad. Nat. Sc., Phila., vol. iv. p. 240.
Coluber septemvittatus, *Harl.*, Med. and Phys. Res., p. 118.

Description. The head is rather small, elongated, suboval, with the snout rounded at the tip; the vertical plate is regularly pentagonal, and broadest before; the superior orbitals are of the same length as the vertical, but very narrow, elongated and quadrilateral; the frontal plates are irregularly hexagonal, broadest transversely, descending far on the side of the head to join the loral; the anterior frontals are quadrilateral, but irregularly so, broader behind, narrower before; the rostral plate is heptagonal, short, and rounded in front as well as above, and concave below; the occipitals are pentagonal, smaller, and notched behind; the nasal plates are two in number, quadrilateral, and nearly of the same size; the anterior lunated behind and the posterior crescentic in front, to accommodate the nostrils, which are lateral, near the snout, and open a little upwards; there are two small, elongated, quadrilateral anterior orbitals; and in front of them is a large pentagonal loral plate; there are two posterior orbitals.

the inferior smaller and quadrilateral, the superior larger and crescentic; behind these is a single oblong temporal plate; the inferior wall of the orbit is completed by the third and fourth labials, of which plates there are eight on each side, all large and nearly quadrilateral. The eyes are large; the pupil dusky, and the iris golden, with a few black specks. The neck is contracted, and covered with small subhexagonal carinated scales.

The body is elongated, rather slender, and covered above with large hexagonal strongly carinated scales, slightly notched at their posterior extremity, and with broad plates below. The tail is long, slender, and slightly subtriangular and compressed at the sides.

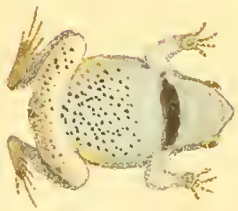
Colour. The superior surface of the head is olive-brown; the lips are straw-colour. The body above is olive-brown, with three longitudinal dusky lines; the belly is pale yellow, with four dusky longitudinal parallel lines on the plates; those near the lateral extremities are largest, those near the centre of the abdomen smaller. The tail is coloured above like the back, though the lines disappear long before they have reached the tip; below, the lateral lines are continued for some distance, the central ones giving only a waving clouded appearance at the junction of the subcaudal scales.

Dimensions. Length of head, 1 inch; length of body, 19 inches; length of tail, 7 inches; total length, 27 inches. Dr. Green informs me that he has specimens in his possession much larger than the dimensions above given. In the specimen here described there were 143 abdominal plates, with the anal double, and 70 subcaudal scales.

Habits. Not much is known of the habits of the Coluber leberis. Mr. Peale, however, once informed me that it was a water snake; and this might almost have been inferred from the form of its scales, which are precisely like those of our common water snakes.

Geographical Distribution. This serpent inhabits Pennsylvania, Ohio, Michigan, New Jersey and New York, and doubtless will be found in many others. To Dr. Green I am indebted for several fine specimens; and to Mr. Haldeman for the living animal.

General Remarks. I am happy in being able to restore this long lost species to its proper place in the catalogue of North American reptiles, having no doubt of its being the Coluber leberis of Linnæus, as may be made plain by following its early history. Kalm, who first observed this animal and furnished the description, resided for a short time in Delaware and Pennsylvania, and from thence he travelled to Canada: now the only serpent marked with dusky lines "fasciæ lineares nigræ," ever yet found in the section of country over which he passed, is the animal now under consideration. It is true he represents it as a viper, and in this he is followed by many naturalists, but they are excusable, as they never saw the animal; and Kalm's observations must have been superficial, and consequently not to be relied on: he was informed the snake was poisonous, and he believed it; as Catesby was told the Heterodon niger was venomous, and he of course represented it in his work with fangs. It is enough to say that no poisonous snakes have been found in the country that Kalm examined, except the Rattlesnake and Copperhead; and the herpetology of this region is perhaps better known than any other part of the United States. Say next described this serpent, and gave it the very appropriate specific name "septemvittatus," from the number of its longitudinal dusky lines; his name, however, cannot be retained, as that of Linnæus has the right of priority, which should be adhered to rigidly.



Bufo quercicus.

22.

BUFO QUERCICUS.

Plate XXII.

Characters. Head short; snout pointed; superciliary arches slightly elevated; body short, flat, rounded at the flanks, above dusky, with a yellowish vertebral line, on each side of which are black blotches; abdomen silver-grey; throat dusky; groins tinged with yellow.

Description. The head is short, with the snout rather pointed, and the nostrils near its extremity; from each nostril extends a slightly elevated ridge, increasing in height to the occiput, where it terminates in a small knob. The eyes are prominent and beautiful, with a black pupil and grey iris, having an inner circle of bright golden; the tympanum is evident but small; the post-tympanal glands are oblong and large, though but slightly elevated.

The body is short and greatly depressed, almost flat; while the flanks are so rounded and projecting as to give the animal an orbicular appearance. The abdomen is flat and completely granulated.

The anterior extremities are small, short, and terminate in four fingers, with a small wart at the carpus; the posterior extremities are also short, small, and delicate, with five indistinctly webbed toes, and two small warts at the metatarsus.

Colour. The head above is dusky, with a yellowish central longitudinal line; the superciliary ridges are grey, with a white mark in the centre; on each side

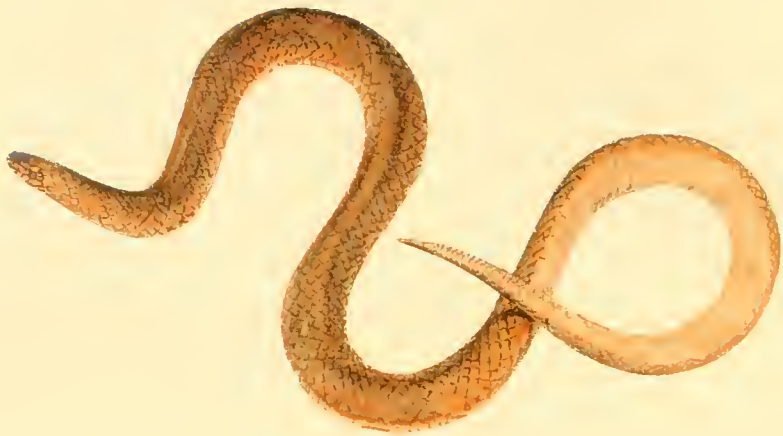
of this longitudinal line is an oblong black spot, extending from it to include most of the posterior part of the orbit of the eye; a small part only of the orbit in front of this is light coloured; the upper jaw is light brown. The back of the animal is dusky-brown, with a vertebral line of pale yellow, marked with a few scattered small warts of reddish-brown colour; on each side of this line are irregular black blotches, with here and there a slight tinge of reddish-brown; the back is covered with innumerable warts and granulations, of variable size and colour, generally black, but the smaller ones of dusky-red; on each flank, and extending from the axilla downwards towards the posterior extremity, is an oblong black blotch, bounded with white both above and below. The throat is dusky; the abdomen silver-grey, yellowish at the groins, and with a pale tinge of yellow around the vent. The anterior extremities, as well as the posterior, are dusky-brown above, marked with black transverse bars or spots; their inferior surface is coloured like the abdomen, except the fingers and toes, which are reddish-brown.

Dimensions. Length of the animal from the snout to vent, three-fourths of an inch; length of thigh, 5 lines; length of leg, 5 lines; length of tarsus and toes, 6½ lines.

Habits. This beautiful little species of toad is mostly found about sandy places that are covered with a small species of oak, which springs up so abundantly where pine forests have been destroyed; whence it is commonly enough called the oak frog; which specific name I have preferred. It spends most of its time in concealment under fallen leaves or partially buried in the sand, from which it is washed out by heavy rains. In the breeding season they seek out stagnant pools, where they deposit their spawn; during which time the male makes a slight chirp not unlike some kinds of insects.

Geographical Distribution. As yet the range of this animal seems very limited: I have only found it near Charleston in South Carolina, and at Smithville in North Carolina; further observation will doubtless prove its existence in other states.

General Remarks. That this little animal is not the young of any other species I am certain, for I have often seen the male and female in company, and have seen the latter deposit her spawn, and that even in confinement.



Coluber annæmus.

23.

COLUBER AMÆNUS.—*Say.*

Plate XXIII.

Characters. Head short; snout truncated; neck not contracted; body slender, covered with smooth scales, above light chestnut-brown, opalescent in some lights; abdomen bright salmon-colour. Pl. 120—Sc. 35.

Synonymes. Coluber amænus, *Say*, Jour. Acad. Nat. Sci. Phila., vol. iv. p. 237.
Coluber amænus, *Harl.*, Med. and Phys. Res., p. 118.

Description. The head is small; the snout broad and but slightly rounded; the vertical plate is very broad, triangular, with its basis rounded, directed forwards, and its apex backwards; the superior orbital is small, subtrapezoidal, and slightly concave at its external border; the occipitals are pentagonal and very large, covering nearly one-half of the superior surface of the head; the frontals are quadrilateral, broad, and most extensive transversely; the anterior frontals are small and oblong; the rostral is very short, rounded above and concave below; the nasal plate is single, quadrilateral, with the nostril nearly in its centre, and opening laterally; the anterior orbital is large, and a parallelogram in form; the posterior is pentagonal, and much smaller; and behind this are two oblong square temporal plates; the inferior wall of the orbit is completed by the third and fourth labials, of which plates there are six, the two anterior quadrilateral, the third and fourth pentagonal and larger, the fifth quadrilateral and largest of all. The eyes are small and exposed; the pupil black, with the iris dusky. The neck is not contracted.

The body is cylindrical, robust for the size of the animal, and covered with

small smooth hexagonal scales above, and with plates below. The tail is short, thick, conical, and ends in a horny point.

Colour. The whole superior surface of the animal, head, body and tail is of uniform very light chestnut-brown, opalescent in certain lights; the abdomen is bright salmon colour.

Dimensions. Length of head, 5 lines; length of body to vent, 8 inches; length of tail beyond vent, 2 inches; total length, 10 inches 5 lines. In the specimen here described there were 120 abdominal plates, the anal broad and double, and 35 subcaudal scales.

Habits. This serpent is mostly found under the bark of old trees or under rocks, where small insects abound, on which it feeds.

Geographical Distribution. The Coluber amænus is found in all the Atlantic states, from New Hampshire to Florida, inclusive; thence it extends through Alabama, Mississippi, and Louisiana, from which state I have also received specimens.

General Remarks. Say was the first naturalist that observed this animal and described it as a distinct species, under the name amænus, which has here been retained.

Crotalus oregamus.

24

Sarony & Co. lith.

P.S. Duval Lith. Phila.

CROTALUS OREGANUS.

Plate XXIV.

Characters. Head very large, triangular, truncated anteriorly; covered above with plates, and with scales on the vertex and occiput, with a broad white bar between the orbits, and two others on the side of the head; one begins above the pit, the other below, and are confluent behind the angle of the mouth; body thick, and marked above with two zigzag white lines, that form a series of trapezoidal or triangular dusky spots, with white margins.

Description. The head is very large, triangular, broad behind, narrow and truncated, or slightly rounded in front, and is proportionably longer than in other Rattlesnakes; above it is covered with plates anteriorly, and with scales on the vertex and occiput; the rostral plate is large and triangular, with its apex slightly truncate and turned upwards; the nasal plates are two in number, the anterior is quadrilateral and very large; the posterior semilunar and smaller, with a concavity in front for the nostrils; the superior orbital plate is large, irregularly quadrilateral, and projects over the eye; there are two anterior orbitals, nearly quadrilateral, and two posterior orbitals, nearly of the same size and form, with three inferior orbital plates, oblong and narrow; in front of the anterior orbital plate, and above the labial range, are several small scales, making the posterior and inferior walls of the deep pit between the eye and the nostril, which is completed above and in front by two large plates; the nostrils are large and placed near the snout, but open laterally and a little upwards;* the margin of the upper jaw is covered with fifteen labial plates, those near the snout are quadrilateral, and those near the

* Of the size of the eye and colour of the iris and pupil, and exact colour of the skin, I can say nothing, as the animal above described had been for a long time preserved in alcohol.

angle of the mouth are more elongated. The neck is much contracted, and covered with small carinated scales of less size than those on the vertex, which are smooth.

The body is elongated, but thick, and covered above with carinated hexagonal scales, and with large plates below. The tail is very short, and terminates in several large rattles.

Colour. The head above is ash colour, paler in front, darker behind, with a transverse white line between the orbits; this line is slightly arched forwards, and terminates on each side in the superior orbital plate, passing through its centre; two other white lines are seen to begin, one above, and the other below the nostrils; these lines unite behind the angle of the mouth; the margin of the upper jaw below these lines is dusky.

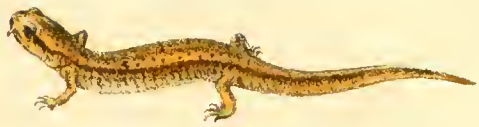
The body and tail is ash colour above, darker than the head, and marked with two interrupted zigzag white lines, beginning about three inches from the head and terminating at the tail; the lines of the opposite sides frequently run into each other, and thus mark out a series of dusky spots margined with white; these spots vary much, some are trapezoid, while others are rhomboidal, and others again nearly triangular; on the neck and tail, where the lines do not exist, there are only a few rounded dusky spots, bordered with white. The plates of the abdomen and tail are very dusky, with the posterior margin of each white.

Dimensions. Length of head, 9 lines; length of body, $12\frac{1}{2}$ inches; length of tail, with rattles, $1\frac{3}{4}$ inches; total length, 15 inches. The specimen here described had 177 broad plates on the abdomen, and 22 under the tail, and 3 large rattles.

Habits. Nothing is known of the habits of the Crotalus Oreganus.

Geographical Distribution. This animal was found in the country west of the Rocky Mountains, on the banks of the Oregon or Columbia river.

General Remarks. I have never seen but one specimen of this serpent, and that was furnished me by the celebrated naturalist Mr. Nuttall, who procured it in the Oregon territory. There can be little doubt of its being a new species, as it differs from the Crotalus horridus in wanting the black lines along the neck;—from the Crotalus durissus, in not being banded;—from the Crotalus adamanteus, in having white lines about the head, in the form and arrangement of its vertebral spots and the number of its abdominal plates;—and from the Crotalus tergeminus, which of all its colour most resembles, in having scales and not plates on the vertex.



Salamandra cirrigera.

30

25

SALAMANDRA CIRRIGERA.—*Green.*

Plate XXV.

Characters. Head short; snout rounded; two barbels to the upper jaw, between the nostrils and lip; body above pale yellow, mottled with black points, and a dusky lateral line; tail compressed, longer than the body.

Synonymes. Salamandra cirrigera, *Green*, Jour. Acad. Nat. Sci. Phila., vol. iv. p. 253.
Salamandra cirrigera, *Harl.*, Med. and Phys. Res., p. 99.

Description. The head is short, with the snout rounded or obtuse, and with two barbels or cirri nearly one-fourth of an inch long, in life, projecting from between the nostrils and upper lip. The nostrils are anterior and far removed. The eyes are prominent and large, with a dusky pupil and golden iris. The neck is contracted, and has a transverse cutaneous fold at the throat.

The body is elongated, but tolerably robust. The tail is longer than the body, compressed at the sides, tapering, and finally ends in a point. The anterior extremities are small, delicate, and terminate in four fingers; the posterior are larger, and sustain five toes.

Colour. The head above is pale cream colour, tinged with red; the upper jaw of similar colour, and the lower lip and throat nearly white. The back and tail above are pale cream colour, with a tinge of reddish-brown, and speckled or variegated with numerous small dusky points; a dusky interrupted lateral line begins behind the eye on each side, runs along the flanks above the extremities, and is finally lost near the tip of the tail; below this line the flanks are mottled

brown, with an irregular series of small white spots; the abdomen is yellowish-white, with a slight purple tinge along the mesial line; the extremities are coloured like the back above, and like the abdomen below, though more dusky.

Dimensions. Length of head and neck to anterior extremities, 4 lines; length of body to vent, 1 inch 4 lines; length of tail, 1 inch 7 lines; total length, 3 inches 4 lines.

Habits. Not much is known of the habits of this salamander; it, however, lives on land, and probably never seeks the water but in the breeding season; and yet the barbels at the snout would seem to indicate an aquatic animal.

Geographical Distribution. Louisiana and Mississippi are as yet the only States in which this salamander has been observed.

General Remarks. The general appearance of this animal is so much like the Salamandra bilineata, that I was for a long time unwilling to receive it as a distinct species, not regarding the cirri as an indisputable specific character; for it is well known that many salamanders put out "singular ornaments," or have curious developments at certain periods of the year; yet Dr. Green believes these cirri to be permanent in the male. The distinctive characters perhaps the most to be depended on, between this animal and the Salamandra bilineata, should the barbels be wanting, which sometimes happens, is the shape of the tail: in the former it is compressed laterally throughout its whole extent, and in the latter it is round; besides, one inhabits the Atlantic states generally, while the other is confined as far as is known to the extreme south.

Salamandra quadramaculata

27
26

SALAMANDRA MACULO-QUADRATA.

Plate XXVI.

Characters. Head rather large; snout rounded; body elongated, stout, dusky above, tinged with purple, and marked with two series of elongated, subquadrate red spots; tail of similar colour, with a red mesial line.

Description. The head is rather large, with the snout rounded; the nostrils are anterior. The eyes are large and prominent, with the pupil black and the iris golden, tinged with red. The neck is contracted, and has a transverse cutaneous fold at the throat.

The body is elongated, but tolerably robust; the anterior extremities are small, with four delicate fingers; the posterior extremities are nearly double the size, and sustain five toes. The tail is longer than the body, compressed at the side, tapering and ends in a point.

Colour. The superior surface of the head is dusky, tinged with purple. The back and tail are of similar colour, the former marked with two rows of small elongated, subquadrate red spots, and the latter with a red mesial line. These spots and lines are bright in young animals, but in adults they are much obscured. The inferior surface of the whole animal is pepper-and-salt grey, with a strong purple tinge; the upper surface of the extremities are dusky; the inferior are dusky, tinged with purple.

Dimensions. Length of head to anterior extremities, 7 lines; length of body to

vent, 1 inch 4 lines; length of tail beyond vent, 1 inch 9 lines; total length, 3 inches 8 lines.

Habits. This is a land animal, but I am not aware of any thing peculiar in its habits.

Geographical Distribution. The range of the Salamandra maculo-quadrata is much more extended in the Atlantic states than I had at first believed; it is common in Georgia and Carolina, and is an inhabitant of Pennsylvania, from which state I have received living specimens; and no doubt it may be found in all the intermediate country.

General Remarks. The specific name of this animal has been chosen from the subquadrate spots on the side of the mesial line; other salamanders have similar series of spots, but not of the same form; the Salamandra dorsalis has round spots, but that is entirely a water animal; and the Salamandra symmetrica has in like manner small round spots on either side of the vertebral line, but then that has a rough skin.

Salamandra rubra

27.

J B Richard, del

P S. Duval, Lith. Pt

SALAMANDRA RUBRA.—*Daudin.*

Plate XXVII.

Characters. Head short; snout rounded; eyes prominent; body above red, with numerous small black points; flanks red, immaculate; abdomen orange-red, immaculate.

Synonymes. Salamandra rubra, *Daud.*, Hist. Nat. des Rept., tom. viii. p. 227, pl. xcii. fig. 2.
Salamandra rubra, *Latr.*, Hist. Nat. Rept., tom. iv. p. 305.
Salamandra rubriventris, *Green*, Jour. Acad. Nat. Sc. Phila., vol. i. p. 353.
Salamandra rubriventris, *Harl.*, Med. and Phys. Res., p. 97.

Description. The head is rather large, with the snout rounded; the nostrils are latero-anterior. The eyes are prominent, with the pupil black and the iris golden and large. The neck is not much contracted, and has a marked cutaneous fold at the throat.

The body is cylindrical and stout; the anterior extremities are small, and are furnished with four fingers; the posterior are larger, and have five toes. The tail is shorter than the body, thick at the root, but soon becomes tapering, ends in a point, and is compressed laterally.

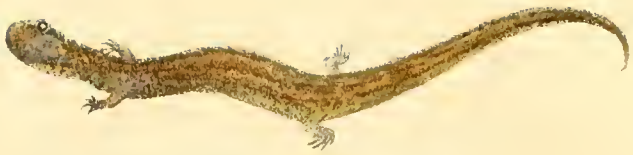
Colour. The whole superior surface of the animal is red, with a few scattered black points about the head, and becoming very numerous along the back and tail; the flanks are brighter red and immaculate; the whole inferior surface of the animal is orange-red; the extremities are coloured like the flanks above, and like the abdomen below, but rather less bright.

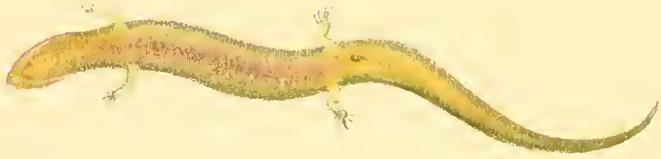
Dimensions. Length of head and neck, 7 lines; length of body, 2 inches; length of tail, 1 inch 8 lines; total length, 4 inches 3 lines. I have observed individuals of still greater dimensions.

Habits. The Salamandra rubra is a land animal, and is found under rocks, fallen and decaying trees, &c., and preying on such small insects as inhabit the same localities. Dr. Green has also frequently seen it in the water, whither it doubtless repaired during the breeding season; and he observed that it was then much more lively and active than when met with on land.

Geographical Distribution. This salamander inhabits the Atlantic states from Massachusetts to Florida, inclusive; but I have no knowledge of its existence west of the Alleghany mountains.

General Remarks. Palisot de Beauvais was the first naturalist who observed this animal, which is certainly one of the most beautiful of our salamanders; he found it under logs and in shady places in Pennsylvania, during his residence there. Daudin, however, gave the first description of it, and this he accompanied with a tolerable figure; he is wrong, however, in supposing the abdomen to be marked with a dusky line.





Salamandra Haldemani

28.

Thos. H. Logan, M.D. pinxt.

P.S. Duval, Lith. Phila.

SALAMANDRA HALDEMANI.

Plate XXVIII.

Characters. Head flattened above; snout rounded; body and tail pale yellow above, slightly olive at the flanks, marked with dusky spots and blotches, disposed somewhat in three irregular longitudinal series.

Description. The head is of moderate size, a little flattened above, with the snout rounded; the nostrils are anterior. The eyes are prominent and large, with the pupil dusky, and the iris bright yellow. The neck is contracted.

The body is cylindrical and slender; the anterior extremities are small, with four fingers; the posterior are much larger, and sustain five toes. The tail is longer than the body, slender and round, only a little compressed towards the tip.

Colour. The head and neck above are pale yellow; the lips are lighter, and the throat yellowish-white. The body above is straw colour, tinged with olive at the flanks, and marked with numerous small dusky or brown blotches, variable in size, and disposed without much order; the largest, however, are on the flanks; the throat is pale yellow; the abdomen is of similar colour, with its central portion strongly tinged with purple; the extremities are coloured like the back above, but with fewer and smaller dusky spots, and are yellow below.

Dimensions. Length of head and neck to anterior extremities, 7 lines; length of body to vent, 1 inch 6 lines; length of tail, 1 inch 11 lines; total length, 4 inches.

Habits. Little is known of the habits of the Salamandra Haldemani, except that it is a land animal, is found under old logs and stones, and feeds on small insects, worms, &c.

Geographical Distribution. This salamander inhabits the states of Pennsylvania, Maryland and Virginia, from all of which I have received specimens, and it will doubtless be found much more widely extended when our herpetology shall be better known.

General Remarks. My friend, S. S. Haldeman, Esq., of Pennsylvania, to whom I am indebted for much information on the habits of reptiles, was the first naturalist who observed this salamander, and procured me a specimen from the borders of the Susquehanna river, and to him I have dedicated the species.

END OF THE FOURTH VOLUME.